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The Bancroft Memorial Lecture.[1]

MAKING MEDICAL MEN.

By SIR ALAN NEWTON, M.S. (Melbourne), F.R.C.S., F.R.A.C.S., F.A.C.S.,

Honorary Surgeon, Royal Melbourne Hospital.

EVERY step in the material progress of the human race has been made possible by the work done by some member of that rare group of men who have been endowed with an eagerness for knowledge and understanding and a "large and liberal discontent" with things as they find them. Such men are forced continually to check and criticize human knowledge, to refuse necessarily to believe that which is generally believed, and to strive throughout their lives to make bad things good and good things better. It is fortunate for us that men of this type have worked in every field of practical human endeavour, because it is to their talents that we owe the progressive increase in our welfare which can be traced from the discovery, in the dawn of time, of the value of fire and of the wheel, to the complex scientific achievements of the present day.

Bancroft was undoubtedly a member of this goodly fellowship; and though it happened that he was trained to be a doctor and made his most important discovery—that of the filaria which bears his name—in the field of medicine, his restless spirit led him far beyond the usual boundaries of this profession. His work in the allied subjects of botany and pharmacology demonstrates how true he was to his type. When Bancroft looked upon a strawberry or a grape, he was not content to join with his fellows in thanksgiving for these kindly fruits of the earth,

[1] Read at a meeting of the Queensland Branch of the British Medical Association on June 2, 1939.

but forthwith set to work to grow a better strawberry and a better grape. Having accomplished these aims, he turned his attention to the breeding of rust-resisting wheat, the pharmacological value of certain Australian herbs and—a tribute to his desire to add to the sum of human happiness—to the improvement of the castor oil plant. He went further afield than this and entered the domain of industry by establishing a factory for the manufacture of pemmican and by devising a new method for the preservation of fish. In point of fact, all was fish that came to Bancroft's net, for he investigated and tried to improve everything that came within his ken.

It requires little imagination, therefore, to picture the eagerness with which Bancroft, if he were alive today, would have thrown himself into the work associated with one of Queensland's latest activities, that of "making medical men", and even less to appraise the results of the application of his unusual qualities to a critical investigation of the methods employed in this work. It is certain that he would have detected and demonstrated many errors and stupidities in the present system, and in so doing would have conferred a great benefit upon us; but it is possible that his usefulness would have ended at this point, because reforms in the medical curriculum necessarily involve alterations in the habits and customs of human beings. Bancroft had spent a large part of his life in improving vegetables, and vegetables cannot object to being improved, so it is not surprising to read that he was intolerant of human opposition and was constantly at loggerheads with his colleagues on committees. We must infer that he failed to realize that the only parallel to be found in the vegetable kingdom to the behaviour of a human being when dislodged from his rut was the shriek of the mandrake of mythology when plucked from its furrow. Other men of his type, whose reforming work brings them into more intimate contact with mankind, inevitably acquire a secondary faculty of tolerance, and realize, only too often, that the utmost they can achieve is so to educate their fellows that the reforms they advocate will eventually be accomplished. Not so Bancroft; but his lack of tolerance is of no importance when compared with the priceless value of his fundamental qualities. We are here tonight to do honour to these qualities; and in view of the recent foundation of the Medical School of the University of Queensland, it may be that we best can do this by attempting to check and criticize our system of medical education, as Bancroft would undoubtedly have checked and criticized it, in the hope that a widespread feeling of discontent with past achievement, however notable, will be engendered, together with an earnest determination to produce better medical men in the future. If some of us, inspired by these feelings, should build a Utopia of medical education which cannot be realized, we can take some comfort from the knowledge that, lacking his eager spirit, our reaction to our failures will be the less intense.

A student of medicine becomes, in popular phraseology, "a medical man" when he has obtained his qualifying degree and is registered as a legally qualified medical practitioner by the government of his country. The subsequent way of life of these new medical men will depend upon their inclinations, their abilities and their opportunities. A few will embrace an academic career or will enter research laboratories; some will strive forthwith to equip themselves as specialists in one of the many departments of medicine; the great majority will enter general practice—a field of work which, from the point of view of the community, is the most valuable and essential of all those which are open to graduates in medicine. It is impossible to adapt the education given to each individual student to meet the special requirements of the post-graduate career which he proposes to enter, and therefore the system of making medical men must be considered with special reference to the education of future general practitioners. The education of its students forms only part of the activities of a medical school, which must concern itself also with research relating to all the manifold aspects of medical work; and in consequence it is by no means difficult for students whose tastes lie in this direction to be brought into close touch with this work during the time when they are going through that standardized course of training, which is sometimes scornfully referred to by the intelligentsia as the process of "making doctors". We are concerned primarily with this process; and with this brief reference to the fact that students who display special aptitude can be given special opportunities, we must proceed to a consideration of the raw material which offers itself each year at the gates of the medical school, and the methods employed to transform this raw material into fully qualified medical men.

Consideration of the raw material inevitably involves the method of selection of those candidates who, in so far as it is possible to determine this point, seem to have that mental and moral equipment which is necessary for the efficient practice of the art of medicine, and of exclusion of those who seem to be unfitted for this career. Intimately linked with this problem is that of the determination of the optimum number of students who can be given efficient instruction in any particular university or medical school, because it is obvious that if this number is exceeded a fall in the general level of its medical education must result, and its newly fledged medical graduates will possess very few feathers with which to fly. Anybody who experienced the difficulties of clinical teaching during the years immediately after the War, when medical schools were overcrowded by students, will agree upon the truth of this assertion. Finally, there is the much more difficult problem of the correlation of the supply of medical graduates with the needs of the community—a matter of great significance to the general welfare, because it inevitably happens that, if the ranks of a learned profession are swelled to a degree which is out of proportion to these needs, certain of its members

are tempted by the hard struggle for economic advancement to forsake those ideals of conduct which are vital for efficient service. This development is of particular significance in this country, where the universities are experiencing very considerable difficulty in coping with the great and progressive increase in the numbers of students, an increase which is quite out of proportion to the growth in the total number of the general population. It therefore seems desirable to direct attention to the cogency of the reactionary sentiments implied in the Egyptian proverb: "I a Pasha and you a Pasha; who's going to drive the donkey?"

The question of the individual selection of medical students would be of small significance were it not for the fact that the reasons which actuate men to embrace the study of medicine are many and various. H. H. Bashford, in a book of essays entitled "Lodgings for Twelve", has summarized the results of an investigation of these reasons, undertaken by his aforetime professor of anatomy, in the following words:

> When the results were published, they were divisible into seven groups. Seven per cent., it seemed, were present by no choice of their own—their way in life had been selected by their parents. Another seven per cent. were proposing to become doctors for the sake of pursuing some ancillary hobby. Twelve per cent. had adopted the career as the least objectionable of the courses open to them. Thirty per cent. were following, more or less automatically, in the footsteps of their fathers. Thirty-one per cent. had drifted into medicine by chance—some accident of circumstance or personal friendship. For a happy ten per cent., it had been their goal ever since they could remember; and a particularly stout or reticent trio could not think of any reason at all.

If the phrase "some accident of circumstance" be regarded as a euphemism for the pursuit of better economic conditions, it seems reasonable to accept this list as comprising the bulk of the reasons which induce men to become students of medicine, and it follows that, with the exception perhaps of "the happy ten per cent.", many of them must exhibit a considerable degree of natural inaptitude for this pursuit. It therefore follows that, for this reason alone, some system of elimination of the unfit is essential.

The American method of selection of students by a committee, which takes into account not only the scholastic record of each candidate, but also, in so far as these are capable of assessment, his personal character and cultural background, is probably the best system, though it is open to the objection that some budding Napoleon of medicine may be excluded before he has had a chance to prove his worth within the medical school. A committee of this type can also take into consideration the capacity of the medical school in regard to numbers and the need of the community for medical men. This system, however, is not at present a matter of practical politics in this country of State aided universities, for it is easy to picture the political pressure that would be brought to bear on behalf of those excluded from entering the medical course by such a committee.

The only practical alternative, in so far as a selection of students from the standpoint of capacity is concerned, is to introduce the naked and simple expedient of exercising a strict censorship of all students during the first year of the medical course and of using the examination at the end of this year as a means of excluding the unfit. This procedure could be carried out more readily and with greater justice if the medical curriculum were altered in such a manner that the first year consisted of the medical subjects of anatomy and physiology (a reform to which reference will be made presently); students are brought into close contact with teachers when they work in small groups in the dissecting room and physiological laboratories, and thus these teachers, most of whom are medical graduates and therefore familiar with the qualities demanded of members of this profession, would be able to form a better and more accurate estimate of the individual capacity of each student than is possible in the impersonal atmosphere of the present first year of the medical course. Selection by this means must be made at the end of the first year because, if he is rejected, the student is not then debarred from attempting some other way of life; if he is allowed to proceed further in the medical course, it is most probable that he will feel committed to this career and will eventually graduate in medicine. The solution of the problem of numerical control of students in accordance with its teaching capacity must be left to the governing body of each university in the hope that some day one of these bodies will resolutely refuse to adopt such procedures as the duplication of lectures and the overcrowding of laboratories in order to accommodate greater numbers, and will reject applications from students for enrolment in excess of that number with which its resources enable it to deal efficiently. The wider question of the correlation of the total number of medical graduates with the need for their services, though not directly the concern of the university, must become increasingly important with each addition to the number of Australian medical schools. There is, it is true, what may be termed a "natural cure" owing to the fact that when a profession is obviously overcrowded there is a decrease in the number of candidates for it; but this, like most natural cures, is clumsy and slow and must eventually be replaced by some more efficient method of control. All that is possible at present is to begin to educate the public in this respect.

Arbitrary control of the number of its students is not a matter of great significance to a newly established medical school which must concern itself primarily with its method of making medical men and, therefore, must take stock of the methods in use elsewhere. It does not require deep insight to realize that the tendency in undergraduate education during the last few decades has been to add continuously to the medical curriculum without subtracting anything from it. The medical course has grown steadily and now is nominally six years in length; but, if the one-year period of resident hos-

pital work be included, the length of the course is actually seven years. This period of residence in hospital has recently been made obligatory in New South Wales and it is to be hoped that other States will soon follow this example. When it is remembered that there is a justifiable desire on the part of university authorities to increase the minimum age of entry to eighteen years, and that, after graduating from the university, candidates for the diplomas of the Royal Australasian Colleges of Surgeons and of Physicians must undergo a further period of post-graduate training of five and three years' duration respectively, it appears that the medical student of the future will be "old and well stricken in age" before he is able to go out to earn his living as a doctor. Though the reason for this increase in the duration of medical training is to be sought partly in recent advances in the extent and complexity of methods of investigation and treatment of disease, there is no doubt that it might have been avoided by the exercise of a wise discrimination in the elimination of work which is no longer essential in medical education. The responsibility for this action must be shouldered primarily by the faculty of medicine in each university; but, unhappily, this is usually a large and rather unwieldy body which prefers to take the path of least resistance. It frequently happens that complaints are sent to the faculty by some specialist or other that students are lamentably ignorant in this or that special department of medical work. The complaint is usually accompanied by a suggestion that a course of ten or twelve special lectures should be given in order to remedy this alleged defect. What can be easier than to acquiesce and to add one course of lectures after another to an already overburdened curriculum, until the total amount of work that must be done renders imperative an extension of the time which must be taken up by the course? When, on the other hand, it is suggested to the faculty that some subject or other should be omitted from the curriculum, it usually happens that the lecturer on this subject, who is a member of the faculty by virtue of his office, is appalled by the suggestion and opposes it so strenuously that it is easier to take no action.

Recognition of these administrative difficulties need not deter us from considering, as impartially as possible, the possibility of pruning the medical course; and it is as well to begin at the beginning, namely, the present first year. This consists of the science subjects of physics, chemistry, biology and botany. Many medical students have obtained honours in the leaving examination in physics and chemistry prior to entering the medical course, and for them the first year's work in these subjects is largely a waste of time. Why not omit the preliminary science year from the medical course and depend upon the schools to give this training, accepting the leaving honour examination as proof that the required standard has been reached? It will be argued that few schools in Australia are capable of giving this instruction owing partly to lack of laboratory facilities and partly to a deficiency in teachers trained to the desired standard. The recognition of these few schools would stimulate others to qualify for a similar privilege and thus would help to raise the general standard of secondary education in this country.

It will be urged that many students would be unable to afford the fees charged by recognized schools; surely it would not be difficult to extend the scope of free places and scholarships already in force at our universities in order to meet this objection? Finally, it would be possible to overcome these and similar arguments by permitting students who have been unable to obtain this training in the schools to study physics and chemistry at the university, perhaps in association with first year science students, until they had attained the standard required for entry to the medical course. It is true that this reform would not necessarily entail a shortening of the time spent by every student in qualifying for a medical degree, inasmuch as the less intelligent would be compelled to remain longer at school in order to pass the honour examination in the science subjects; but this would be a most desirable sequel, because it would be possible, in addition to science work in the last year of school life, to make some attempt to complete the education of each student in such subjects as English and history, and thus to give him a share in that common background which is so essential to all those who present themselves at a university to receive a specialized higher education. There is no doubt that at present many students are compelled by the length of the course to leave school at too early an age, and in consequence are obviously lacking in those cultural qualities which should form part of the mental equipment of every member of a learned profession. These qualities cannot be acquired in the course of the first year in medicine at our universities because, as the Vice-Chancellor of the University of Melbourne pointed out in his inaugural address this year, culture cannot be directly pursued and cannot be mass-produced. It can only be developed "in a group of a size that is capable of considering and being considered by the individual". He went on to state that "there is a numerical stage—as all who serve on committees will know—at which a group must become a mob, and once that has happened there can be nothing but mob education which is the antithesis of all for which a true university should stand". Group education is carried on in the later years of the medical course; but the first year, under present conditions, consists in mob education of the most obvious type, with all its attendant disadvantages. An extra year at a good school would be far preferable, at least until the time arrives when our universities can afford to dissipate their mobs by multiplying their teachers.

In discussing the question of the relegation of first-year subjects to the schools, attention has been directed chiefly to physics and chemistry; there remain for consideration the subjects of biology and botany. There is little doubt that in these days of standardized pharmacological products the

subject of botany has merely an historical association with medicine and should be omitted from the course. It is regrettable that the vast majority of youths are permitted to leave school without the slightest knowledge of biological principles or the structure and function of their own bodies. It is obviously desirable that this defect in our system of education should be remedied. In so far as medical students are concerned, if the medical course began, as is advocated, with the study of the present second-year subjects, the lectures in the first term in the anatomy department could be devoted largely to instruction in these biological principles, much of the detail which is taught at present being omitted. This plan would not delay the entry of the student into the dissecting room, where he would at once receive the benefits of group education. The first term in the physiology school could similarly be devoted to the study of organic chemistry.

The preclinical portion of the course, if this reform were adopted, would consist of two years devoted mainly to the study of anatomy and physiology. During this time every student should acquire a sound knowledge of straightforward regional anatomy (an end which can best be achieved by demonstrations to small groups in the dissecting room), in the course of which emphasis should be laid on the relationships of structures that are of special clinical significance. The practice of devoting considerable attention to a study of such minutiæ as the more intimate details of the various tracts in the central nervous system is probably largely a waste of time in the education of future general practitioners, and future specialists in this subject can easily acquire this knowledge at a later stage of their education. The same principle should obtain in physiology, the teaching of this subject being correlated with that of clinical medicine and surgery.

The value of examinations as a test of knowledge is debatable; but it seems probable that much of the criticism levelled at the examination system should be directed, more properly, against unskilled examiners, who bring the system into disrepute by setting stupid papers and asking ambiguous questions. A well-conducted examination is a good test of knowledge and, what is even more important, constitutes a potent stimulus to effort on the part of the examinee. It is therefore desirable to hold an examination at the end of the first and of the second year of the course, though the system might be strengthened by the furnishing of reports from demonstrators in charge of the various groups of students upon the work done by each man during the year. Due consideration should be given by the examiners to these reports, which would be of special value in the examination at the end of the first year, if, as has been urged, this should be regarded as a means for elimination of the unfit.

The remaining years of the course are devoted in the main to clinical instruction—the business of learning how to treat sick people; and it is essential to remember that this treatment must entail a knowledge of the art of medicine in addition to familiarity with the scientific advances which constitute the foundation upon which this art is based. The art of medicine can be learned only by close personal contact with patients, and there is no doubt that the amazing growth which has taken place in recent years in scientific methods of the diagnosis and treatment of disease has focused attention primarily upon this aspect of medical education, with the result that opportunities to learn the art of medicine have been limited. This is probably the reason for the criticism that recent graduates in medicine are too scientific and are ignorant of methods of personal management of the sick. Though no medical school, even if its course was doubled in length, could be certain of imparting this knowledge to all its students (much of it can be acquired only in the hard life of practice), every school should be careful to maintain a just balance between instruction in the art and in the science of medicine; and it may help us to arrive at an estimation of this balance if we consider for a moment the knowledge and skill which a student should be expected to possess before he is given a medical degree. We expect him to have a sound knowledge of the principles of general pathology and of the more common aspects of special pathology; but, as we realize that he will probably never be called upon to make a microscopic diagnosis of a tumour during his professional career, it is not necessary to insist upon competency in this respect. He must know when to advise surgical treatment, and should be acquainted with the risks of and the probable benefits to be expected from this treatment; but it is undesirable that he should feel competent to operate, except in conditions of the gravest emergency, until he has received post-graduate instruction in this work. He must realize the value of recent biochemical aids in the diagnosis of disease; but, as a beneficent government scatters laboratories about the country in which investigations of this type can be performed, it is not essential for him to become an expert biochemist. He must be able to examine special sense organs, but only to a degree which makes it possible for him to determine when specialist treatment is necessary. It does not matter much if he is ignorant of the refinements of diagnosis of radiological signs, for he can usually avail himself of the services of an expert in this work. He must, of course, be a competent obstetrician; but here again expertness in such procedures as Cæsarean section may tempt him to be actively harmful to his patients. Finally, and most important of all, he must be taught to recognize intuitively when a patient is really ill, even if he is unable to give the illness a name. With the acquisition of this instinct there come also other qualities, such as the ability to realize when a patient should be treated with sympathy and kind-

ness and when, on the other hand, discipline should be enforced. Successful practice of the art of medicine depends chiefly upon the possession of qualities of this type, and if we could impart them to all graduates, quacks in this country would be rare and impecunious.

If it be agreed that these constitute the fundamental requirements of undergraduate clinical education, it must be admitted that work done in the wards and out-patient departments of a hospital is of paramount importance and that every effort should be made to avoid encroachment upon the time available for this work. This encroachment varies in extent and in character in different medical schools; but, speaking generally, special courses of lectures in such subjects as radiological diagnosis and psychology could be omitted. The course of lectures in pharmacology could be merged in that given in therapeutics. Lectures in anæsthesia might be replaced by further practical work in this subject. A course in operative surgery is of no value to undergraduates, and that in surgical anatomy might well be replaced by the giving of special attention to anatomy in ward talks. Demonstrations in the various specialties should be confined to the teaching of those portions of these subjects which are essential for general practice. Ruthless pruning of non-essentials in these and other directions would increase very materially the opportunity afforded each student for clinical work in the hospital, which is the only environment in which a proper balance can be maintained between the science and art of medicine, and at the same time would probably permit of the shortening of the duration of the course by six months, or even one year, without the sacrifice of any essentials in medical education. If this decrease in the length of the course was accomplished, it would be easier to insist on one year of training as a resident medical officer prior to registration by the government as a legally qualified medical practitioner. There is no doubt that the experience gained during the year spent in this work is of more value than that obtained throughout the whole medical course.

It will be argued that a decrease in the length of the course is a retrograde step, which will inevitably be followed by the production of "half-baked" practitioners. The course was increased from five to five and a half and, later, to six years, in order to allow time for the teaching of detailed knowledge which is steadily increasing in the special departments of medical work. That this attempt proved unsuccessful is indicated by the amazing increase in post-graduate diploma courses during the period in which this change was made. What is to happen in the future? Medical knowledge is constantly advancing, and we must determine whether we shall go on increasing the length of the course in order to impart to students this increasing sum of knowledge—a procedure comparable with that of a dog chasing its tail—or whether we shall adopt the policy of giving all students a sound grounding in the general principles of the science and art of medicine in a reasonable space of time, leaving it to each man to increase his efficiency at a later date by post-graduate study in any direction which appeals to him. It seems obvious that, sooner or later, we shall be compelled to adopt the latter alternative.

The adoption of the fundamental principle of giving greater time and significance to practical clinical work and instruction necessarily increases the responsibility of the physicians and surgeons who are appointed as clinical teachers. It must be the first duty of these men to attempt to alter the mental outlook of each new generation of students coming to the hospital by impressing upon them the devastating fact that, whereas exact knowledge in the earlier years of the course has flowed into them by means of lectures, they must now abandon this lecture habit to some extent and think for themselves. They must also be taught to realize that each patient will describe his symptoms in accordance with his individual reaction to them, and that few will present all the signs of any particular disease described in the text-books. It is equally important to direct the special attention of students to common conditions frequently encountered in practice. Every student loves to diagnose rare diseases; therefore it should be impressed upon all students that, in the words of Rutherford Morrison, "if they see a bird on a housetop it may be a canary, but it is a thousand to one it's a sparrow". This tendency, unhappily, is not confined to students, for there are some clinical teachers who seek to display their own cleverness and erudition by concentrating upon abstruse topics, possibly in the hope that they will reap benefits in the future, when some of their students have entered the field of general practice.

Students must be made an integral part of the organization of the hospital and must never be given the impression that they are in the wards as a privilege rather than as a right. It is desirable that each student should spend some weeks in the latter part of his medical course actually in residence in the hospital. Patients must be allotted to students in rotation, and no clinical teacher should demonstrate a case until the student in charge has completed his investigations and has made a provisional diagnosis. When this demonstration is given, attention must first be directed to the anatomical, physiological, biochemical and pathological points relating to the case, because by this means each student will be able to recall facts impressed upon him earlier in his course and to realize the clinical significance of the knowledge thus acquired. It is also important, at these bedside talks, to teach the value of various modern aids in diagnosis and treatment, while emphasizing the necessity for first making a diagnosis on clinical facts alone. It is simple in this manner to obviate the necessity for courses of special lectures on these modern advances, because the student can obtain

adequate instruction in the wards, where also he can gain a due sense of proportion in the estimation of their value. Knowledge of these modern advances should never overshadow that of the more ancient methods of clinical investigation in the strict sense of this term, and it is absolutely essential that every student should be familiar with the proper methods of making such an investigation. It must be impressed upon him that more mistakes are due "to not looking than to not knowing".

Students are very human creatures and do not like work any more than the rest of us, so it is necessary to make sure that their duties in the wards are conscientiously performed. Many of them strive to find quasi-legal methods of avoiding these duties, of which perhaps the most popular is that of watching operative work. This is a pure waste of time for all students except those who are directly concerned with the patient who is being operated upon, and therefore a student's gallery should never form part of an operating theatre in a clinical school. It will help to inspire each student if his clinical teacher knows him by name and takes a personal interest in his problems and his welfare. It is also desirable that junior assistants and resident medical officers in each clinic should share in teaching work, devoting particular attention to helping students to acquire skill in minor everyday procedures, such as the application of plasters, the dressing of wounds, the performance of various aspirations, and so on.

It is unnecessary to amplify further these points of importance in the teaching of what may be termed the science of medicine. There remains for consideration that training in the art of medicine, which, as has already been explained, is an essential part of the equipment of an efficient doctor. This side of medical education is often overlooked in the impersonal atmosphere of a large hospital, and in consequence there is a tendency to regard patients as cases rather than as human beings, with all the hopes, fears, anxieties and responsibilities which are the common lot of all mankind and which play a particularly significant part in the picture of many diseases. Let us determine, therefore, to impress upon our students the necessity for the cultivation of an interest in the personal difficulties and economic environment of their patients, in the hope that by this means we shall help to diminish that shameful crop of doctor-made neurotics which is so plentiful in our midst, and to abolish such stupidities as the prescription of an expensive proprietary preparation for a man who is struggling to exist and to bring up a family on the basic wage, when a cheaper pharmacopœial drug would serve the purpose equally well. No student should be allowed to refer to "that case of peptic ulcer in the end bed on the right", but should look upon this patient as Mrs. Smith, a widow with five children and an inadequate income; nor, if it should happen that complete investigation reveals no evidence of organic disease, should he be allowed to tell Mrs. Smith that there is nothing the matter with her; there is something the matter with her, even if this is only a psychoneurosis brought on by her manifold anxieties, and it is very necessary that the student should understand and attempt to alleviate her troubles. If, on the other hand, it should happen that the diagnosis of peptic ulcer is confirmed by examination, he should be taught that it is not enough to dismiss her with a prescription for an expensive alkaline powder, together with instructions in regard to diet which are impossible of fulfilment; but he must learn that he must endeavour to arrange treatment which can be reasonably undertaken by this particular patient, having paid due regard to her circumstances and environment. Many similar examples could be given; but the whole matter resolves itself into a reorientation of our method of approach to the teaching of clinical medicine by emphasizing the importance of the patient as an individual rather than by regarding him merely as a body surrounding some particular diseased organ. It would help in this direction if the example set by Minot in establishing a medico-social clinic were followed by every clinical school, because in such a clinic the student in charge of each patient makes a personal investigation of his home environment and economic problems, and thus is able to report on the type of treatment which offers the best prospect of success in each individual. It is true that the valuable almoner system is of great help in this work; but it is very desirable that students should also undertake it, because by so doing they would acquire that wisdom and understanding in the management of human beings, lacking which they can have no conception of the real art of medicine.

The success of a system of medical education in which reliance is placed mainly upon practical hospital work, and in which didactic lectures are reduced to a minimum, will depend largely upon the earnestness with which students do this work. Some will be enthusiastic; others must be driven. The most potent weapon for this purpose is the type of final examination which they must pass. If this examination can best be overcome by "applying the seat of the pants to the seat of the chair" in order to read text-books, most students will do very little ward work. If, on the other hand, the examination demands practical knowledge of ward work, all students will strive to qualify themselves by the faithful performance of this work and will thus be made better medical men.

If the suggestions made in this attempt to check and criticize the medical course after the manner of Bancroft should meet with any measure of general approval, the means whereby these can be brought into force become important. Those of you who are concerned with the new Queensland medical school will encounter less difficulty than will men who are attached to more ancient institutions. Much depends upon the force of tradition in, and the constitution of, each university. Reference has already been made to the unwieldy nature of many

faculties of medicine; there is no doubt that greater efficiency would result if this body were replaced by a medical oligarchy consisting of a few men who would be responsible for the direction and control of medical education. In the University of Melbourne, alterations in the curriculum must be approved not only by the Faculty but also by the Professorial Board before being submitted to the Council of the University, which is the supreme governing body. When the Faculty of this University discussed the question of the relegation of the first year in medicine to the schools, a statement was made that it did not matter much what action was taken, as the Professorial Board would certainly veto it. This may or may not have been true; but it seems ludicrous that a Board of this type, the members of which can have no practical knowledge of the educational requirements of a medical practitioner, should be given power to interfere in these matters. The position is made even more ridiculous by the fact that the two most important subjects in the whole course—medicine and surgery—are in charge of lecturers who, therefore, have no voice in the proceedings of this Board. It seems desirable that professors generally should be relieved of this collective duty and thus be given more time to attend to their important activities.

It must be admitted that we cannot build a Utopia of medical education merely by altering hours and conditions of work. The efficiency of any medical school must depend ultimately upon the capacity of its teachers, and here another difficulty is looming up over the horizon. Members of hospital staffs are becoming more and more divided up into various narrow specialisms, and yet the training of the general practitioner of the future remains their responsibility. If this process continues, and there is no reason to suppose that it will not, there will come a time when some wise general practitioners must be attached to all clinical schools in order to make sure that students retain a sense of proportion in regard to the relative importance of the various special departments of medical activity. Whatever changes may take place in the type of man selected for clinical teaching, one basic principle will continue to govern this work, namely, that the reaction of a student to the process of being educated will depend upon the enthusiasm and energy of his teachers, each of whom must humbly realize that his delinquencies in this respect may have far-reaching and lamentable results upon the future of the men committed to his charge. Those of you who have been given the task of teaching in this new school of medicine must shoulder a great responsibility. How can you better discharge your duties than by striving to impart to your students some of those qualities which made Bancroft so pre-eminent? How could these qualities be better summarized than by the poet Watson when he wrote:

> The thirst to know and understand
> A large and liberal discontent;
> These are the goods in life's rich hand,
> The things that are more excellent.

JUVENILE DELINQUENCY.[1]

By JOHN MCGEORGE, M.B., Ch.M., Dip.Psych.,
Honorary Assistant Physician, Psychiatry Clinic, Royal Prince Alfred Hospital, Sydney.

PRACTICALLY the only aspect of juvenile delinquency upon which the students of this subject are agreed is that it presents a very pressing problem, the solution of which still remains hidden in the maze of theories which have been produced by the earnest workers in this field. Each has his pet theory as to the causation and the treatment, which is of value only in proportion to the amount of practical work he has done among delinquents. It is hoped that this paper will summarize to some extent the work done by many different people who are well qualified to speak on this question.

Various bodies are interested in the subject and some of these are doing really valuable work; others are too intent on theorizing to realize that the problem is becoming more and more acute and that an early solution is essential to the preservation of the social structure of the community.

It seems that the most satisfactory method of considering the matter is to view it from the medical aspects of ætiology, symptomatology and treatment. By benefiting from the experiences of others we can possibly see a way out of the difficulty which confronts us, and, although theorizing, make some practical suggestion based upon the known facts that are available.

There has been a definite increase in the number of convictions for juvenile crime during the past twelve months, although the figures do not equal those of the peak period of 1935. The Sydney *Sun* has published the following figures: 1935, 7,064 cases; 1936, 6,555 cases; 1937, 4,889 cases; 1938, 5,629 cases. These statistics reveal that there had been a gradual decline for two years and then the numbers began to increase; the last figures represent an increase of 740 cases, which is decidedly disquieting. It is difficult to account for this increase; especially is this so in the case of car stealing and "joy-riding", which have caused considerable comment from the Bench. Later I shall put forward a suggestion with regard to the motivation of such acts. In this connexion it is of interest that Kirkpatrick[(1)] pointed out that there was a reduction of 20% in juvenile delinquency during the depression years, 1930 to 1933. This may be explained by the fact that the father was at home during this time of great unemployment and was therefore able to give his son the companionship and interest which would have been denied him under ordinary working conditions. The parent, returning home exhausted after a hard day's work, would normally be too tired to bother with the child, who would then be left to his own resources, often with disastrous results. It would appear that the

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 25, 1939.

father is of some value in the home, rather than being merely the wage earner.

Before I discuss the factors which give rise to delinquency, it is necessary to have some conception of the meaning of this term. It may be defined as the commission of an antisocial act by one under the age of eighteen years. This antisocial act or crime can be described as an offence forbidden and punishable by law. Of course there are many minor delinquencies with which we are not concerned. According to the broad definition that I have given, we are all potential, if not actual, criminals. The Americans seem to excel in the manufacture of laws which harass without helping the general public. For example, it is a serious offence in one western State for hotel bed sheets to be less than six feet in length. One might reasonably assume that the local politician suffered from gigantism. Another piece of legislative idiocy was perpetrated when it was pointed out that a man convicted of a fourth offence had to be sentenced to life imprisonment, while, if armed at the time of his arrest, he received a sentence of only twenty years. The law was hastily amended so that he was sentenced to life imprisonment if unarmed, but if armed had to serve an additional five years. They did not specify how this was to be done.

For practical purposes we shall consider the major crimes of violence, sex and theft, and a few minor offences which may be of some significance.

It may be of interest to study the age period at which delinquency most commonly occurs. The records of the Children's Court of Sydney show that delinquency is greatest between the ages of fourteen and fifteen years. This is not unexpected, for at this time many children have left school and are passing through puberty, and are therefore subjected to the strains of both social and physical adjustment. At this age they are often idle, and as a result of bad companionship may well drift into crime. We now come to the question of why delinquency develops; this will eventually lead us to suggestions as to its prevention.

Causation.

Many factors are involved in the causation of delinquency; but they fall roughly into three groups: environmental causes, physical causes and mental factors.

Environmental Causes.

Two principal elements go to the making of a delinquent: the external and the internal. The former consists of the environment, immediate and remote, and the latter of the physical and psychical forces that are at work.

Environment means more than the four walls and the roof of a home; it includes the neighbourhood, the school, the companions and all those other things with which the child is brought into contact. The mental attitude of the parents plays a large part; the sympathy and understanding of the teacher are a most important consideration; even the district in which the home is situated may be an influence for good or ill. Although environment may not play a very important part in the development of a neurosis in a child, as Neustatter[2] has shown from his study of the effects of poor social conditions in the production of neuroses, it undoubtedly is a big factor in the causation of delinquency. Neustatter, of course, refers particularly to the physical environment, and indicates that only 20% of children from poor families were nervous, while 38% from well-to-do families were neurotic. He found, however, a statistically significant relationship between the presence of an anxious disposition in the parents and the presence of anxiety and tendency to worry in the children, which is irrespective of the social status.

Undoubtedly the most important environmental influence is the home itself, and in the home the parents wield the greatest force on the social adjustment of the child. Children may resent parental control when it is improperly exercised, and instability is most pronounced in children from homes with defective discipline, neurotic parents or poor heredity. Maltreatment or petty annoyances arouse the resentment of a child and may well result in some antisocial outburst as a perverted expression of this resentment. Jealousy is a fertile source of trouble, particularly when preferential treatment is accorded step-children. This frequently causes resentment, irritability and obstructiveness, which may eventually lead to the child's being brought before the Children's Court as uncontrollable. An aggrieved child may even leave home, become a wanderer, steal to obtain food and clothing and thus bring himself into conflict with the law. The remarriage of a parent when a child has grown up obviously means that he has to make a considerable readjustment, and the reaction in the majority of cases to the approaches of the step-parent is one of disappointment and sullenness.

Investigation has shown that there are five types of homes which provide fertile soil for the growth of antisocial tendencies. These are the following.

The Slovenly Home.—In the slovenly home one or both parents is addicted to alcohol, is abusive and aggressive in manner and speech, and expresses definite antisocial ideas. The child is ignored and neglected and has to find his amusements outside the home. Because of the attitude of the parents he also develops a grievance against constituted society, and gravitates to the group of young hoodlums who have similar views. It is not long before he is in the hands of the police and passes on to an institution. He becomes the "gang" type.

The Repressive Home.—In the repressive home the child is not allowed a thought or action of his own. He is brow-beaten and bullied, and seeks every excuse to escape from a well-nigh intolerable situation. He must develop a sense of inferiority and become furtive and sly; he has no other means of obtaining what he wants. This child readily tends to over-compensate for his submissiveness in the home and becomes a bully and braggart outside it. This soon leads to criminal acts, so that the child may obtain the money for making the necessary display. In this group belong many of the

"joy-riders" who steal cars to impress their friends and elevate themselves in their estimation.

The Indulgent Home.—It may seem paradoxical that a child who has his smallest whim gratified and who has only to ask for anything in order to obtain it immediately should come within the scope of this subject. It must be remembered, however, that it is only within the home that his wishes are speedily granted; outside the home he finds that this does not occur. He becomes obstinate and refractory as a result and comes into conflict with his teacher and schoolmates. He is the petulant, sullen child who has few friends and is thrown back on himself for amusement and companionship. From such a group come the forgers and embezzlers of later life. They only know the easy way, and the hard road of industry is not for them. They are incapable of facing up to adversity in any form and seek to escape from their difficulties by lies and theft because they have never had the training in the home to show them how to do otherwise.

The Broken Home.—With few exceptions all investigators are agreed that the broken home is the commonest source of the juvenile delinquent. At the Mental Health Conference, held in January, 1939, at Westminster, Shiels[3] stated that the keynote of the whole subject of delinquency was home conditions. The broken home, the home where the parents were not on good terms and where the child might be torn between divided loyalties, produced instability. The results emerged most obviously between the ages of twelve and sixteen years. It seems that when the home is violently disrupted the child tends not to display guilt or emotion, but to revel in his misdeeds. In this home one parent is missing as a result of death, divorce, desertion or some similar cause. The remaining parent has to accept in many instances the full responsibility for the care and upbringing of the child. This parent probably has to go to work, leaving the child alone, and he may easily fall into bad company. Another aspect is that the remaining parent may be resentful of the responsibility and vent the grievance on the child, or may be continually complaining and thus lose the affection and esteem of the child and drive him to seek comfort and sympathy at other, and not necessarily better, hands. North[4] refers to "the fretful complaining widow who cannot understand why her boy or girl is listless, depressed or has no appetite". This is an example of the type of reaction that arises in a broken home. For a child in the formative years to have to listen continually to a diatribe directed against members of the opposite sex in general, and the missing partner in particular, must result eventually in a distortion of his attitude towards society and in antisocial tendencies. Bruce[5] found that 37·8% of delinquent children came from broken homes. This makes the broken home the greatest single factor, not only where environment is concerned, but also in the ætiology of delinquency generally.

The Indifferent Home.—In the indifferent home the child may have every material advantage but no real affection or sympathetic attention. Conversely, it may be a home in a poorer district where the same lack of consideration is evident. The child is left very much to himself; he may readily become resentful of this neglect and end as an uncontrollable child brought before the Children's Court. Bad companionship and lurid literature will take the place of parental affection and interest, with disastrous results. In the wealthy home mothers with social aspirations and fathers with a golf handicap which they want to reduce are just as much at fault as are poor parents who have to work to keep the home together and spend their free hours at dog races or picture shows.

A recent case was that of two lads who had been reading the adventures of a burglar hero and decided to emulate him. They ended their exploit at the Children's Court, where an understanding magistrate made inquiries and found that the mother of one spent most of her days playing bridge, while the father spent his on the golf course. The other mother was a social climber, who devoted all her spare time to footling charities, while the father was given to interstate travelling on very doubtful business matters. They were more than astonished when the magistrate pointed out that the fault was theirs rather than the children's, and allowed the latter to go on probation.

At the best such parents can be regarded as thoughtless only; but there are many instances of thoughtless acts having serious consequences.

Other Environmental Factors.—So much for the homes from which delinquents may come; there are, however, many other environmental factors which may be at work. The normal child is a natural imitator and is given to hero worship. He models himself on the person for whom he has the greatest respect or with whom he is most in contact. This may be one or other parent or a popular school mate or teacher. Some of these "heroes" may be worthy of emulation; but there may be many who are not. The right type of companionship is most essential in the early and thoughtless years. The parents themselves may prove a most important environmental influence to the child. The average child is sensitive to alterations in the feelings of those around him. Fear may be readily inspired because of the actions of those in his vicinity. This fear, caused for example by a bullying, drunken father, may alter the whole course of a child's life. It is not too much to say that such a condition in the home may make the child furtive and secretive, a liar and even a thief, because he is afraid to ask his father for a few pence to spend as other children do. Similarly, the positive element of excessive self-assertion in the parent causes in the child the negative reaction of self-abasement, dependence and lack of initiative in adversity. Fortunately, the father may also exert a steadying influence, curbing childish impulses and restraining emotional exuberance.

The parental environment, even at its worst, may be better than many institutions, where emotional

sterility is more damaging to the child than begrudged affection in the home. Delinquency as a whole is the outcome not of inherited tendencies to immorality or crime, but of faults of environment or management. It seems that there is no inherited moral sense, but instead a gradual response to years of training, example and experience in homes and in schools. Wherever there are much poverty, overcrowding and malnutrition, or harshness, neglect or misunderstanding in the home, there will be found a relatively high percentage of juvenile delinquency.

Discontent with the environment may play a part in directing the child into the wrong path. For example, a child who has come from a poor home to spend a period in a modern hospital with every comfort will feel unhappy and envious of the better lot of others on his return home, and may steal to obtain a few of those luxuries which he has had under better conditions. Even so, the moral environment is more important than the material; satisfactory training is better than luxury.

The physical element must be considered as well as the psychological; this means the actual type of home in which the parents live, the district and the degree of overcrowding which exists. Healy[6] draws attention to the mental results of the huddling of people together. He states that it is asking too much to expect people who are brought up under conditions which necessitate bodily exposure and premature acquaintance with sex affairs to respect related types of conduct which make for the welfare of society. Respect for parents, for the integrity of family relationships and for the human body itself is largely the basis of our civilization, and nothing so easily militates against this respect as crowded living conditions. Further emphasis on this aspect of the subject has been laid in the report of the Federal Emergency Administration of Public Works of Washington.[7] The conclusions arrived at as a result of intensive investigation are that bad housing conditions, especially overcrowding, coincide with and are conducive to criminal tendencies and still more to immorality. Poverty, heredity and mental deficiency also play a part. There was found to be a noticeable coincidence between overcrowding and areas known to be criminal or degraded. In these homes there are no facilities for the child to play—nor, for that matter, in the district. As a result there is the ever-present danger of association with delinquents or even young criminals. In some cases as many as thirteen people were living in three rooms. Over half of the total amount of juvenile delinquency was found in homes that were classed as "poor" or "very poor". A low moral tone must result from this herding of all sexes and ages.

The important factors in the environment of the delinquent are therefore poverty, overcrowding, malnutrition, harshness, neglect, misunderstanding, alcoholism, quarrels, immorality and separation of the parents. Absence of adequate recreation may also play a part, not only in the slum areas, but also in flat districts. Flat life limits companionship; there may be no other children in the building, and it is rare to find proper facilities for play where there are only hard concrete courts and busy streets. Furthermore, small families are common among flat dwellers (landlords make it so) and there are few brothers or sisters to meet on equal terms. This isolation is bad for any child and may lead to mischievousness, rebellion and ultimately to refractoriness.

The Physical Factor.

The next factor in delinquency which has to be dealt with is the physical one. This is not of such great importance as the one I have discussed; but in some instances it may play quite a large part. Bruce[8] made an investigation of 1,174 children at the Children's Shelter and found that infected tonsils, defective vision and nervous disorders were the commonest physical abnormalities present. Defects of hearing and speech played a relatively small part. However, when these are in evidence it is noticed that they exert considerable influence on the child's behaviour. One can appreciate that a sickly child, as a result of tonsillar infection, may not be able to compete with his fellows, may feel inferior and then become recalcitrant and obstructive. A similar and probably more pronounced sense of inferiority is often found in the child with speech difficulties, mocked and derided by his school mates and possibly even mimicked by a foolish teacher. Defects of vision and hearing may lead to a child's being regarded as dull and dealt with accordingly. He may be unfairly punished, may feel himself an outcast and become stubborn and resentful. A child has a very keen sense of justice, and unmerited chastisement may alter the whole course of his social adjustment. Swanton[9] expresses this very well when he states that "an unreasonable punishment will only breed resentment, which, if the punishment is persisted in, as it often is by parents who find their child's conduct intolerable, will probably produce either a neurotic character or a spirit of rebellion".

A case in point is that of a lad who suffered from severe headaches, became sullen and morose at home because his parents complained of his abstraction and diffidence, and eventually flew into violent rages, in which he would knock his head against the wall. He was finally brought before the Children's Court as an uncontrollable child. Examination at the Children's Shelter revealed an error of refraction; when this was attended to the result was disappearance of the head pains and a consequent complete change in disposition.

Many similar instances can be cited. Defective vision causes the child to fall behind in the class, when he becomes discouraged and finally plays truant. Defective hearing isolates him from his fellows, and he may become morbidly introspective. Later he finds it difficult to obtain any satisfactory employment because of this defect. Thus both conditions militate against normal social development in the child.

Many observers have pleaded for a medical approach to the question under discussion; Lurie[10] states that there has been too great a trend toward the psychological rather than the physical investigation of these cases. He holds that "the environmentalist with his social approach to the study of the problem child was the first to supplant the organicist, and he in turn is being supplanted by the psychologist and the psycho-analyst". This may be regarded as poetic justice. Of course, the truth is that no one method of approach is suitable for every case, and discrimination should be exercised as to which is applicable. In many instances more than one must be used. This author analysed 1,000 cases of behaviour disorder in children and found that in 49% of these cases the cause was endogenous or psycho-physical in origin. Somatic disorders, disorders of the central nervous system, endocrine disorders, deviations in intellectual status, psychoneuroses, psychoses and constitutional psychopathic states were largely responsible for the reactions investigated. In only 23% were the factors exogenous—that is, due to environment, home and neighbourhood combined. In the remaining 28% both endogenous and exogenous elements played their part. This is an example of the divergence of opinion that occurs concerning the importance of the home as a causal factor. The weight of evidence seems to favour it, however. In a surprisingly large percentage (9·1) of these children endocrine disturbance was present—an incidence to which attention does not seem to have been drawn previously.

Kanner and Lackman[11] have also remarked on the influence of physical illness on behaviour. Disorders of conduct may arise in normal children during illness, or in unstable children. The forms they may assume depend on the nature of the illness (for instance, pseudo-asthmatic attacks in connexion with or because of the dread of asthma), on the child's personality, on parental attitudes and reaction tendencies or on various incidental factors. Healy[12] also considers the physical aspect of importance and draws attention to the frequency of occurrence of ocular defects (in 10% of a series) associated with irritability and discontent; to nose and throat obstructions and the accompanying general malaise and dull, inefficient appearance, which may prove a disability as far as employment is concerned; to carious teeth with toxæmia, which may stand in the way of social achievement; and to various minor nervous disorders, such as habit spasms, which may lead to restlessness and instability.

Serious physical ailments may, in the adolescent, by causing incapacity for work and enforced idleness, result in antisocial acts, to compensate for the victim's rejection by employers.

Fatigue may be important in leading to minor and later to major delinquencies. This has been shown by Cameron,[13] who states that unhappiness and fatigue in school life may result not only in disorders of physical health, but also in disorders of conduct, such as lying, stealing, truancy and masturbation. With his burden of unhappiness, thrown back on himself and unable to find interest in the ordinary occupations of school, the child may be consumed with anxiety or secretly burn with a sense of injustice, which may result in these perversions of normal conduct. He may resort to phantasy and fail to realize where the distinction lies between the real and the imaginary, and thus be branded a liar. Fatigue leads to inefficiency, and lying may be the escape resorted to in order to avoid the results. Malnutrition, the stress of an unhappy home and unsatisfactory living conditions may all contribute to fatigue, with resultant falling behind in school work and the manifestation of delinquencies as a compensation.

Anxious parents seek in head injuries a cause for the trouble; but there are comparatively few people who have not suffered from a head injury at some time or other. It does sometimes happen that such injuries may be a possible factor, and in one series 11·5% of patients were found to have had concussion or loss of consciousness as a result of head trauma. It has been suggested that in such cases there may have been some upset of mental balance with possible damage to brain structure. Blau[14] collected a series of 22 cases of personality and behaviour disorders resulting from head injury. However, he gives no information as to the incidence of these among the general population or among delinquents. Each case is well authenticated. It is interesting to note that not a single case of pure mental deficiency of verified traumatic origin could be found. The clinical picture of these patients was that of a hyperkinetic, unrestrained, antisocial person, with little alteration in intellectual efficiency. Pathological changes consisted of ganglionic degenerations, glial alterations and petechial hæmorrhages. Defective inhibitory control was the outstanding psychological feature. Complete recovery was the rule in acute cases; all six of these patients showed a satisfactory improvement within a month. Five of the twenty-two developed typical epilepsy within a year, and in twelve cases a chronic behaviour disorder followed the trauma and manifested itself in antisocial acts, delinquency and uncontrollability. These behaviour disorders strikingly resembled post-encephalitic behaviour problems, to which reference will be made later.

It is an accepted fact that injuries to the frontal lobe can produce a complete change in the patient's temperament and disposition, as was demonstrated in the famous "Crowbar Case"; in this case severe injuries to the frontal lobe were sustained, and a progressive mental and moral deterioration followed. It is not unreasonable to assume that the same may occur in some cases of head trauma.

This reference to the head brings to mind the anthropometric measurements to which Lombroso attached so much importance. It was suggested that there were definite criminal types of persons,

who had easily recognizable physical characteristics, particularly in regard to head measurements. It was thought that all delinquents, young and old, would show obvious signs of degeneracy in their appearance. This theory and those of Lombroso's followers, such as Gall and Lauverne, were exploded by the researches of Goring,[15] who showed that the mean median, transverse and horizontal head contours of 802 convicts and 108 engineers coincided exactly. One can only assume that the morality of the engineering profession is very low, or that the devotees of anthropometry are entirely wrong. The latter seems to be the correct assumption. Goring finally summed up as follows: "Our inevitable conclusion must be that there is no such thing as a physical criminal type."

Lombroso[16] also held that the criminal was an example of atavism, or throw-back, showing in his behaviour primitive predatory tendencies. While heredity cannot be discounted in any form of human behaviour, research workers believe that criminality is not a positive quantity, but that inheritance acts in a negative sense; in other words, the absence of certain qualities makes delinquency possible. An excellent example of this is to be seen in the case of twins, in whom the same inherent and acquired tendencies must be at work. Rosanoff[17] reports on the records of 340 pairs of twins. Of these, 107 were juvenile delinquents and 136 were children with behaviour disorders. The remainder were adult criminals. It was found that in monozygotic twins, whether male or female, when one of the pair is a juvenile delinquent the other will be the same. This indicates that when heredity and environment are similar the behaviour may also be expected to be similar. These findings are quite in keeping with what has already been said about the influence of a faulty environment, as this must have been the common denominator in each case.

We now come to the consideration of certain other physical conditions which have not been mentioned.

Epilepsy.—Children suffering from epilepsy are frequently unstable, emotional and nervous, particularly so when there is absence of restraint. A factor which reacts to their disadvantage is the difficulty they find in obtaining employment when they leave school. The *Workers' Compensation Act* seems to have made their lot even harder. They are left idle and see their more fortunate companions advancing at their chosen work, and so become disgruntled and aggrieved. Many have the typical epileptic temperament (sullenness, irritability and aggressiveness), and this soon involves them in trouble with the authorities. Many thefts, assaults and sexual offences come from this group. Although the children themselves may not be actual epileptics, some relative is, and the children react in exactly the same manner. Violence, vicious temper and progressive mental deterioration are only too common amongst them. They are often incapable of adequate social adjustment, and are solitary, selfish and lacking in normal affection. They evince egotism and morbid sensitiveness, and are difficult to manage, querulous and complaining. In a few instances epileptic automatism may be responsible for some delinquency; but such an excuse must always be viewed with considerable suspicion. One rarely hears of this condition except in the law courts.

Encephalitis.—It is well recognized that one of the sequelæ of *encephalitis lethargica* in children is distortion of the moral sense. It has been suggested that this is due to the upsetting of the physiological relationship between the cortex, thalamus and hypothalamus. Temper outbursts, change in the affections and mischievous behaviour are common. These children are unreliable and lacking in moral sense; they become absolutely untrustworthy and the truth is not in them. There seems to be some analogy between this condition and disease of the frontal lobes, although mental deterioration, if it does occur, appears late and is not pronounced. I cannot agree with the opinion expressed by Bond and Smith,[18] that these behaviour disorders respond to reeducation through interviews, play techniques and psychoanalysis. This criticism is not meant for the last, but for the failure of Bond and Smith to appreciate the organic nature of the condition. They state that of 85 children 76 were discharged, and that 20 of these had fully recovered. Eighty of the 85 showed improvement but relapsed on their return home because of "alcoholic fathers, infantile mothers and criminal neighbourhoods". It seems that the relapse might be better explained by the ravages of the disease than by the influence of the home; even the most rabid proponent of the environmental factor would admit this.

Chorea.—It may be said that in chorea the child is jerky in both mind and body. Interference with cortical control results in excitability, restlessness and outbursts of temper and crying. Such behaviour disorders as arise are usually of a minor nature. To some extent moral conduct may be affected. If such children are the subjects of ridicule and mimicry they may become stubborn and resentful, and possibly eventually violent. There is no doubt that physical inferiority leads to aggression as a compensation in many instances. Such people have a grudge against society, and a sense of futility and hopelessness. They may follow the line of least resistance because they are unfit to compete with their fellows.

Changes of Adolescence.—Adolescence itself may present both a physical and mental problem to a child. He has to make new contacts and new adaptations to his altered circumstances. Adolescence is the end of childhood, and in many instances the end of dependence. In the poorer homes it means the search for work, the accepting of responsibility for which the child is ill prepared, and the meeting of his fellows on a competitive footing. Mott[19] has well expressed this:

At puberty a new and potent source of psycho-physical energy comes into being; consequently circumstances and influences which promote or antagonize the normal evolution of pubertal development will exert a profound influence on the mind, the effects of which will leave a lasting impress upon the character and conduct of the individual.

The failure to pass successfully through this evolutionary phase will result in maladjustment with its attendant antisocial tendencies. Sybille Yates[20] classifies the adolescent as a mongrel. He is neither child nor adult. He has the obligations of manhood without its privileges. Phantasy and dream life play important roles, with a rapid development of great enthusiasms and interests. When schooling is ended, the child, in many instances totally unprepared, is turned out to face all the terrors of an entirely new environment. He must shift rapidly from his world of dreams to intense reality. The onset of puberty often coincides with a strong sexual urge, and if the boy is unprepared because he is unfortunate enough to have prudish parents he may well be involved in some sexual misdemeanour before he rightly knows the meaning of the term.

Mental Factors.

Mental factors are many and varied. In some cases it is difficult to determine where the environmental influence ends and the psychological influence begins; often the two are inextricably intertwined. Sometimes the psychiatric approach is over-emphasized, and as Gregory[21] has pointed out, its slowness in getting results has made it lose favour with many educationists and parents. Gregory classifies delinquents into three groups: (i) the normal delinquent, whose crime was committed in extreme circumstances, usually opportunity; (ii) non-psychopathic personality deviates, including the neurotic, schizoid or paranoid types, those with aggressive tendencies, and the inadequate, shiftless, weak and suggestible; (iii) persons with psychopathic personalities, immature emotional development or neurotic manifestations; the emotionally unstable, nomads, and those with sexual abnormalities.

Of group (iii), 86% were recidivists and apparently incorrigible; 30% of group (ii) committed one or more offence also after a first conviction. The graver forms of delinquency were most common in those with a psychopathic personality. This shows the great importance of the mental aspect of delinquency.

Even a normal child may be influenced by mental stresses of different types—anxiety, worry and unhappiness. If any instability is present, the effects will be correspondingly greater and may lead to the child's being declared uncontrollable. Strong suggestions may have a determining influence on the behaviour even of the well-adjusted child; among these are the popular "thriller", the moving picture which glorifies the gangster or which portrays luxury and idleness in attractive terms, arousing in the child envy and a desire to obtain, by any means, similar comforts, and which may give rise to a spirit of envy which can be assuaged only by car stealing or theft, as an expression of self-assertion or in a spirit of boastfulness. Recklessness or display may be a compensation for some deficiency, intellectual or otherwise. Resentment or disparagement may provoke an intense reaction of an antisocial nature.

Mental dissatisfactions, criminalistic imagery and irritative mental reactions to the environment are conditions which may seek expression or relief in misconduct. It is possible for habits of thought to develop involving criminalistic ideas and imagery. These may be based on what the child reads in the newspapers and in general literature, if it can be so called, and in things seen in motion pictures.

Adolescent mental instabilities may also play their part with impulsions which training has been insufficient to control. At puberty there are many mental conflicts, worries and repressions which interfere with the workings of the inner self and give rise to what are termed relief phenomena. The lad who feels that he is a social outcast will develop a grievance against society, particularly if he suffers from mental peculiarities or twists which do not actually amount to aberration.

We are all a compound, more or less harmoniously balanced, of those innate tendencies which we call instincts. Lack of control over those primitive instincts of acquisition, sex, pugnacity and self-preservation may well lead to conflict with the law. Such people may be said to suffer from malnutrition of character and from failure to grasp the importance of inhibition. To such people the instillation of the Hedonistic principle of pleasure before all else may prove tragic. The instincts are the basic drives in human nature, and must be curbed so that each one may be able to enjoy social life. It appears that many forms of delinquency and crime are due to conflicts of an emotional nature. At times a criminal act may be entirely compulsive, as when the patient is under some unconscious obligation to perform the act; if the act is left undone, such a state of tension is produced that an actual mental breakdown is the only alternative.

Going a stage further, we come to those with a constitutional psychic inferiority, which results in failure of adjustment to emotional stress; this produces refractoriness and stubbornness. Failure of understanding on the part of the parent serves only to aggravate matters. In such psychopathic personalities abnormality is expressed mainly in the character and intensity of the emotional and volitional reactions. These persons are irritable, quarrelsome, impulsive, suspicious, vain, untruthful and conceited. They may even have moods of excitement and depression with paranoid tendencies at times.

This brings us to the actual mental disorders which may give rise to acts of delinquency.

Hysteria.—Offences may be committed by hysterics more or less unwittingly. As an expression of assertion in an inferior type we may find mutism, fugues, amnesias or fits. Sometimes there occur emotional explosions and imitations of acts which have achieved some undue publicity. The maid who causes considerable consternation by telling of a fight with burglars and is found tied to a chair on her employer's return is an example. The basis of most of these cases is disinclination for work, due to indolence or fatigability. Wrong placement, inadequate training and an unsympathetic superior are also factors.

Psychoses of Adolescence.—The commonest adolescent psychosis is schizophrenia. The katatonic impulses in an unrecognized case may lead to charges of inflicting grievous bodily harm or malicious damage. The foolish, meaningless behaviour may result in arrest. With greater facilities for psychiatric examination of offenders such persons are weeded out and appropriately dealt with. Manic-depressive insanity is less frequent, but in the manic phase may cause violence and destruction of property or petty and useless thefts. The depressive state rarely causes trouble unless so acute that a suicidal attempt is made.

A boy, aged fourteen years, two years ago had a fractured skull without any apparent serious sequelæ. He became very depressed and self-absorbed, moody, solitary and unsociable. He then made an attempt at suicide by shooting himself in the chest with a pea-rifle. He remained depressed for a considerable period and eventually had to be certified and sent to a mental hospital. His intelligence quotient was 73·3%, which might be taken as just low enough to prevent his exercising normal control over his impulses.

Lurie[22] made an investigation of 1,000 problem children and found 20 psychoses amongst them. The children studied did not include those with organic disease of the nervous system. Lurie states, and correctly, that psychoses in children are rarely diagnosed because they are not sharply defined, and the bizarre reaction is merely looked on as a behaviour problem. The deeper personality changes involved are usually unrecognized because diagnosis and treatment are centred around individual symptoms. Thirteen of these children were considered to be suffering from schizophrenia, and six from psychopathic personality with psychosis. The reason for admission to a mental hospital of three of the latter was delinquency, and more than half the former were sent in because of peculiar behaviour. In eleven of the schizophrenic group the onset was acute, ushered in by moral, intellectual and psychic disturbances. All the children of the series suffered a moral break, as shown by some form of socially unacceptable behaviour.

It seems that such conditions as those mentioned must be borne in mind when otherwise inexplicable disorders of conduct appear; but they are relatively infrequent and are quite likely to be overlooked.

Mental Deficiency.—There is considerable divergence of opinion with regard to the relative frequency of mental deficiency in delinquents. The consensus of opinion, however, is that it is an important factor. There are three grades of intellectual defect: the idiot, the imbecile and the feeble-minded. The last probably presents the greatest problem to the authorities, as the other two are of such low-grade intelligence that they are incapable of carrying out a well-conceived plan and are usually caught *in flagrante delicto*. Mental defectives are unable to profit from experience or training and readily succumb to temptation. The backward child, even of moderate degree, is unable to keep up with other children at school and becomes discouraged; he is often the butt of others and the scapegoat for minor offences. He can readily be persuaded to commit acts which a normal child would refuse to countenance. He is too dull to look ahead and cannot in later life face up to the demands of society or his employer. To many of these unfortunates theft is the easiest way of gaining a livelihood. They may be summed up as hard to reason with, slow to see a point and forgetful of advice.

With regard to the higher grades of deficiency, Lurie,[23] who is a most prolific writer on the subject of delinquency, studied the behaviour problems of 225 children who had an intelligence level of 80% to 98%. It might be well to describe how this is determined. The mental age of a child is obtained as the result of a series of tests of increasing complexity for each year, and this is expressed in years and months. The figures which result are divided by the chronological age and multiplied by one hundred. This gives us what is known as the intelligence quotient. Those with a quotient below 25% are regarded as idiots, from 25% to 50% imbeciles, 50% to 70% feeble-minded, and 70% to 90% as backward or dull. It is the last group which is being considered. This group has been singled out because, since the children do not appear mentally retarded, their dulness is often overlooked. They frequently become problem children because of lack of understanding of their intellectual limitation. They are guilty of incorrigibility, delinquency, truancy, sex offences, failure at school, abnormal conduct and inability to adjust themselves in industry. The behaviour problems in this series ranged from temper tantrums to murder. In 18% of cases the intellectual subnormality was directly responsible for the behaviour difficulty.

The term "retardation" is used by East,[24] as opposed to mental deficiency, and he gives examples from his experience of adolescents who have proved most difficult to deal with, but have subsequently settled down to lead a normal life. He is of the opinion that these represent a delay in intellectual development rather than a defect of any permanence. It seems more reasonable to assume that he has been dealing with psychopathic states or minor psychoses from which recovery has eventually taken place. An example quoted is that of a girl who had been convicted of theft, ran away from various

homes in which she had been placed, attempted suicide and was very headstrong and unruly. She admittedly suffered from periods of depression and impulsiveness and excitability. She was returned several times to a Borstal institution within a short time of her discharge. Eventually she became quite well, married and appeared perfectly normal. This he regards as retardation and physiological imbalance rather than mental defectiveness. It appears that she was a typical manic-depressive rather than anything else. East puts his suggestion of retardation thus:

> If the controlling functions of the mind are known to have been impaired throughout the pre-adolescent period, and the environmental conditions have been entirely favourable, we can exclude with some degree of accuracy both pre-psychotic and transient adolescent instability, and have some reason to suppose that we are dealing with an inherent constitutional defect, which may satisfy the statutory definition of mental defectiveness. But it seems proper to hesitate before a transitory delay in the development of character and control is stigmatized as mental defectiveness, unless enforced by the exigencies of any particular case.

The comment on this, of course, is that it is incorrect to assume that the signs shown do not constitute a psychosis or instability and therefore the theory is based on a false premise.

Moral Defect.—Until quite recently a controversy raged around moral defect. The term originally used was "moral imbecility"; this was held to be incorrect, as many patients so labelled were not imbeciles in the strict sense of the word. This is true; "moral defect" or "moral deficiency" is more correct. Other observers held that such a condition did not exist at all; and it was not recognized legally until quite recently when support was lent by its inclusion, by the British Medico-Psychological Association, in the classification of mental disorders. These patients apparently have no moral sense whatever. They are liars and thieves from a very early age. No amount of correction or discipline has any effect on them; they are quite incapable of distinguishing between "thine" and "mine". In many instances they make no effort to escape detection as they cannot see that they have offended in any way. They are habitual offenders for this reason. Their acts are often of very little profit to themselves and are frequently motiveless, and the articles stolen are of no value and the lies told of no benefit. Remorse is a thing unknown to them.

Stoddart[25] retains the term "moral imbecility" and states that it is characterized by deficient control of the instincts and a fondness for crime. The use of the word "fondness" is hardly apt; these persons do not deliberately seek to commit an antisocial act, but merely avail themselves of an opportunity when it arises, irrespective of their justification for so doing. Stoddart inclines to the belief that the patient exhibits cunning and deceit in evading detection. This is contrary to the views of most observers. However, he is correct in stating that the moral defective shows an egotism that is unbounded, and is a conceited braggart.

Children who have been brought up in a criminal environment and have never been taught the difference between right and wrong, and who commit offences, cannot be regarded as moral defectives. They are capable of correction and of learning that their conduct is not in accordance with the demands of society. It is possible to make good citizens of them, if not by education, at least by punishment. The moral development of a child is dependent on many factors. Training and guidance are important, for we inherit a complex of temperament, physical peculiarities, idiosyncrasies and liabilities, balanced one against the other. Children of high intelligence may have a low moral sense. Fear of rough usage and physical violence, hunger, contact with vice, all influence moral development.

Lack of moral sense may be the sequel to various illnesses and organic states, such as *encephalitis lethargica*, head injuries, mental deteriorations, cerebral tumour and meningitis.

Healy, who has written text-books on the subject of these disorders of conduct in children, has investigated several series of cases. One such comprises 455 patients, of whom 208 were defective types and 152 aberrational types (including the psychoneurotic and psychotic); those with peculiar mental characteristics numbered 95. Here again the importance of mental defect is emphasized as a mental factor; it accounted for 46% of all cases. Although Burt[26] stated that he found only 8% of mental deficiency among his patients, it appears that the weight of evidence favours the belief that it does play a large part. Further support is lent to this view by the report of Osgood[27] on 400 delinquents. He found that 21% of the boys and 29% of the girls were definitely feeble-minded. He also sets the peak period for offenders as between the ages of fourteen and sixteen years. Six boys and two girls had psychoses, two boys had epilepsy, fourteen had psychopathic personalities, and normal intelligence was found in only 18% of the boys and 17% of the girls.

Summary.

This concludes the study of the most important aspect of the subject, namely, the ætiological factors, which have been dealt with in some detail. This can best be summarized by the quotation of further figures from Healy with regard to causation. In a group of 2,920 patients he found 590 with mental abnormalities, 556 with defective home conditions, and, rather surprisingly, 502 with defects of heredity; but this appears only as a minor factor, never a major factor. The figures which most closely approach these are the following: bad companions, 279 cases; abnormal physical conditions, 273 cases; defective early developmental conditions, 214 cases. The first and last are again environmental in origin. This brings the total of

these to 1,049 cases, which should be sufficiently conclusive. If at any time we tend to be harsh and unsympathetic towards these children it may help to change our attitude to know that out of all this number only one case was recorded in which deliberate choice was exercised.

Symptomatology.

Little need be said about symptomatology, for the offences committed are familiar to all and many have already been referred to. The boy shows a greater tendency to truancy, stealing and running away from home; the girl, to sex offences and lying. The figures, again from Healy, in 694 cases are: stealing 455 (65%), running away 261 (37%), and truancy 225 (32%). The only other delinquency numerically close to these is lying, which was observed in 104 cases (14%). Other male offences include burglary, pocket picking, forging, vagrancy, violence, false pretences, drunkenness and various sex offences. The girls numbered 306. Sex offences were committed by 180 (60%); 97 (31%) stole and 80 (26%) told lies. None of the other disorders of conduct is sufficiently common to require mention.

Let us consider what psychological mechanism is at the back of these antisocial reactions.

Stealing.

The motive in stealing may be greed or desire because of uncontrolled instincts. The child may steal with the object of revenge by taking things from one who is disliked. It must be remembered, as Alice Hutchison[28] points out, that through wrong handling and misunderstanding this unfortunate habit may be developed, as the child is one who cannot adjust himself to the increasing demands of life. The acquisitive instinct in children needs curbing, and failure on the part of the parents to curb it may have serious consequences in later life. Even the most normal of children want things which attract their attention; they often take them without being aware that they are doing wrong. If it is explained to them that they cannot have everything which takes their fancy, well and good; but if they are treated as little thieves, resentment alone may make them offend all the more. The most certain way to perpetuate a fault is to magnify it at its first appearance, for the suggestibility of the child makes him apt to conclude that the tendency to this misdemeanour is a personal peculiarity, for which he is in no way responsible. Thieving may also serve to gain his ends in other directions and help him to achieve a small measure of notoriety.

Persistent Lying.

Persistent lying is often due to pure fear and a desire to escape punishment. When a child is caught unawares and is not given an opportunity to explain his actions and is faced with a situation in which he must answer yes or no, his natural tendency is to deny the offence. This is a simple defensive mechanism. He may then be forced to further lies to protect himself and ultimately be branded "a little liar", when his indignation may give rise to still more offences. Day dreaming and the play of imagination may make it difficult for a child to distinguish where the truth lies, and thus fault will be found where none really exists. Here again the motives of revenge and jealousy may impel a child to lie to get a rival into trouble.

Truancy.

Few parents realize what a child is doing in his spare time, and the lure of parks and companionship may lead a child by easy steps into the habit of staying away from school. Running away from home or school may merely be an expression of a desire for a life of adventure, fostered by reading, and it is usually not long before the foot-sore, penitent and disillusioned wanderer returns. It may also serve as an escape from a situation with which the child is unable to cope, such as an unsympathetic teacher, bullying companions, inferiority or backwardness. The pace is too great for him to keep up.

Sex Offences.

Sex offences may be the result of ignorance or of lack of control, or in older children of primitive impulses. Awakening curiosity in the child may easily lead to masturbation, which instability will render a habit. The example of others may be a determining factor. Such aberrations of the sexual instinct as perversion are in most instances due to this also. This is most noticeably so in the mental defectives. One cause of sexual precocity in children, which is commonly overlooked, is *encephalitis lethargica*. This is quite apart from loss of moral sense, which is quite a well-recognized sequel of this condition. A child may become sexually so hyperexcitable that offences which one would expect only from an adult may be committed.

The fact that sexual misdemeanours are more common among girls is probably due to the fact that they are more likely to attract the attention of perverted adults and can raise less resistance to attack. Furthermore, the consequences of sexual delinquency are more obvious in the girl, while the boy may often escape suspicion.

Repression is an important provocative factor in many instances. An unnecessarily prim attitude by the parents may lead to an unhealthy curiosity in the child, and he may receive a wealth of misinformation from an unsatisfactory source as a result. The crucial point is the manner in which the first detected offence is treated. Explanation and understanding will go far to prevent the tragedy of a bewildered child who cannot understand what all the fuss is about and may go to some serious sexual extreme in his ignorance.

Other offences are of such relative infrequency as to need no further comment. All may be regarded as expressions of an unsatisfactory adaptation, the cause of which has to be determined and then remedied.

Treatment.

It is perhaps emphasizing the obvious to mention that the first step in treatment is to find the cause and then to deal with it. This may lie in the home, the school or the district. Discontent from grievances, real or imaginary, must be sought for and removed. A careful physical examination is indispensable, for an apparently minor malady may, in certain circumstances, have widespread and unforetold results. Faulty environment and ill health having been thus eliminated, there remains an investigation of the mental state. It can be seen from this that the most desirable combination of investigators in this field must be a woman who is a trained psychiatric social worker, a psychologist and a psychiatrist. The social worker, who must be the most tactful of women, undertakes a task before which the most robust of males would quail. She has to enter the home in order to determine whether there is any environmental fault which may serve to explain the child's reaction to society. Needless to say, the worker is rarely welcomed with open arms. Notes, often remarkably comprehensive and of extreme assistance, are prepared on this aspect of the problem. The psychologist then enters the picture, takes a careful history, bearing in mind which aspects are of greatest importance, carries out an intelligence test and makes any comment he sees fit on the facts as he has elicited them. The whole is finally submitted to the psychiatrist, who studies the general mental condition of the child. A conference of all three workers is ultimately held, the evidence obtained is carefully sifted and some conclusion is arrived at with regard to the solution of the difficulty which prevents the child from making a proper social adjustment.

This course of action is largely prophylactic and the best results are obtained in early cases, in minor offences and with first offenders. It is the method of election in child guidance clinics, which save many delinquents from becoming incorrigibles. Before I say more about these organizations, let me consider how the law, as represented by the Children's Court, deals with the fully fledged delinquent.

The child, if the offence is a minor one, may merely be admonished by the magistrate and allowed to go. If the offence is a more serious one, he is charged and remanded to the Children's Shelter for a week or more. During this period he is given a thorough physical examination and any mental tests necessary are performed. Whenever possible an investigation is made into home conditions, and allowance is made for any influence there which may excuse his offence. The parents are also interviewed and the possibility that the fault lies with them is considered.

Ultimately a report is presented to the magistrate, who then decides, after viewing all aspects of the case, whether the offender is to be sent to a farm home for six months or an indefinite period, according to whether he is a first offender or not, to be allowed on probation to some responsible person, or to be dealt with in any other manner which the court may decide. A sympathetic and understanding magistrate may make all the difference between rehabilitation and relapse.

Prevention is always the best way of dealing with a problem such as this, and the establishment of child guidance clinics, which might better be termed parent guidance clinics, will go a long way towards saving children from their first appearance before a court. In Sydney we have one at the Royal Alexandra Hospital for Children, where many of the difficulties of problem children, who only too often are the precursors of the delinquent, are successfully solved. There is another in connexion with the Department of Public Instruction, where children of the school period are dealt with, and there is an attempt by an independent body to establish a similar clinic on the lines of the London Child Guidance Clinic. Those clinics which have no connexion with any government department have to depend on public subscription. This has proved not to be wanting in one of the most remarkable institutions of its kind in America, Juvenile Hall, at Los Angeles. Here the children are treated as sick children and are thoroughly examined in what appears to be a hospital but is really the hall. Many are returned home well, physically, mentally and morally. A comparatively small percentage have to be sent on to corrective institutions. Subscriptions come from public-spirited citizens and the Community Chest. In London the Institute for the Scientific Treatment of Delinquency, the committee of which reads like a social register, is endeavouring to solve the problem by all possible means. In 1937 there were 1,767 attendances and for the year there were 167 new patients.

We cannot expect to put the whole onus of this very serious problem on to the Government, which has many commitments. It is a duty of the citizens to show sufficient interest in the moral integrity of the nation to take an active part in the prevention of these conditions to which reference has been made.

The Police Boys' Clubs are doing much to keep adolescents off the streets and to improve their general physical health. A further value in this scheme lies in the fact that it makes for a better relationship between the lads of the slums and the police, whom heretofore they regarded as their hereditary enemies. The provision of more parks and playgrounds and the eradication of slum areas which is gradually taking place will also help considerably; for vice is not a thing of sunlight and fresh air, but an emanation from the filthy hovels of overcrowded areas.

A change of environment in the case of a poorly nourished, unhappy and maladjusted child may go a long way towards restoration of his confidence and faith in human nature, and so in the long run make a better citizen of him. There are many charitable organizations working to this end. They are of all denominations or quite unsectarian, but the value of their work is inestimable.

The earliest form of prevention is seen in the kindergartens, with which, fortunately, our city is studded. Very few of the happy, healthy children seen there will ever become a menace to society. In addition, there are many welfare organizations carrying on the good work started by the officials of the Children's Court. Great care is exercised in the selection of those responsible for the care and supervision of delinquents, and harshness and brutality have been replaced by sympathy and understanding.

The most important measure is the education of parents in the proper handling of their children. This can best be carried out by clinics attached to the various public hospitals, by addresses arranged by public bodies and by the circulation of pamphlets on the subject. It seems more desirable in this connexion to use the term "problem child" rather than "delinquent", as many parents are prepared to admit that their child is the former, but very rarely the latter. They should be encouraged to bring the child to clinics and to welcome the advice which would be so freely given.

Sublimation of the urges of youth into desirable channels by gymnasiums, clubs and camps is a valuable preventive measure. In these and other classes the teaching of sex hygiene will help to eliminate sexual offences. For younger children play therapy in the hands of a specially trained person is invaluable. By this means children are taught useful occupations in such a fashion that there is nothing irksome about the teaching. They indulge in games and exercises and thoroughly enjoy them; their spare moments are usefully occupied and there is no risk of bad companionship.

The keynote of success in dealing with delinquents is genuine understanding of the problems which have suddenly confronted a child, incapable, through no fault of his own, of solving them. To such a child promises should never be made which cannot be fulfilled; undue severity should never be exercised or temporizing indulged in. No matter how delinquent he may be, he will respond to justice, and no matter how incorrigible, he will respect punishment if it is well merited. Weakness and maudlin pity may be even less productive of results than harshness and coldness.

In the more serious cases the only thing that can be done is to send the child to one of the farm homes for training and discipline under proper conditions and in the control of the Child Welfare Department. There the work of reclamation may go ahead; but unfortunately there are only too many recidivists. If greater facilities were available, it might be possible to separate the children according to offences, ages and cooperativeness. This is done to some extent now; but it would entail enormous expense to achieve this desirable end, so that the best that can be done at present is to strike at the origin of the trouble through the medium of the clinics I have mentioned. With regard to these, the Child Welfare Department is doing its best at the Children's Court and elsewhere; the Department of Public Instruction is helping to solve the troubles of the problem child at school; and it now remains for the ordinary citizen to lend whole-hearted support to those other organizations which are trying to prevent delinquency rather than to cure the delinquent.

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THE DIFFICULT CHILD.[1]

By D. W. H. ARNOTT, M.B., Ch.M., D.P., F.R.A.C.P.,

Honorary Psychiatrist to the Royal North Shore Hospital and the Royal Alexandra Hospital for Children.

"DIFFICULT" means not easy to do; when this term is applied to a child it generally means that the child is not easy to manage. This implies a childish habit

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 25, 1939.

which either irritates the parents or other adults, or is considered antisocial by them. Difficulty, as seen from the parents' point of view, may embrace every form of childish activity, normal or otherwise, according to the patience or resistance of the parent; and if the term is to be of any use clinically, it must be delimited. It is, I think, best kept to cover only the severer grades of abnormal and antisocial conduct which cannot be controlled by ordinary means of understanding and education. If you prefer it, the term "severe difficulty" might better be applied to these cases. It is this group of "severe difficulty" disorders that I wish to deal with tonight. Difficulty is concerned with the outward manifestations or conduct of personality rather than with the inner mental processes—rather with the manner in which a disease may affect a child's reaction to outside stimuli than with the pathology and symptoms and signs of that disease.

Conduct is the total motor response of the nervous system to stimuli from either outside or inside the body; this response depends on the incoming environmental stimuli, the disposition and strength of the instinctive patterns and the then present state of nervous irritability and the strength of the inhibiting nervous forces. The first two may be called psychological causes, the last two, if they can be separated, organic causes.

This paper will deal with the incidence and possible causation of severe difficulty in 271 consecutive cases referred to the Child Guidance Clinic of the Royal Alexandra Hospital for Children.

Table I shows the incidence of severe difficulty in this series.

TABLE I.

Diagnoses in 271 Consecutive Cases referred to the Child Guidance Clinic of the Royal Alexandra Hospital for Children.

Causes of Difficulty.	Difficult.	Not Difficult.	Total.
Mental deficiency	24	69	93
Epilepsy	24	55	79
Probable brain damage—			
(a) Cerebral diplegia and birth injury	3	19	22
(b) Head injury (severe)	2	2	4
(c) Post encephalitic condition	1	3	4
(d) Chorea	1	3	4
(e) Whooping cough (?)	2	—	2
Conduct difficulties due to psychological causes—			
(a) Environmental	13	—	13
(b) Peculiar disposition and obsessive tendencies	5	—	5
Tics	—	9	9
Hysteria	—	3	3
Anxiety states	—	9	9
Mongolism	—	12	12
Enuresis	—	7	7
Masturbation	—	2	2
Dirt eating	—	2	2
Hypothyreoidism	—	1	1
	75	196	271

It will be seen from Table I that of the total number of cases of severe difficulty (75), mental deficiency provides 24 cases or 32%, epilepsy 24 cases or 32%, and organic brain damage 9 cases or 12%, and that psychological causes account for 18 cases or 24%.

As both mental deficiency and epilepsy are largely dependent on the physical constitution of the brain, the difficulties arising from the first three can be classed together generally as having an organic basis. Thus the causation in this series of 75 cases of severe difficulty may be allotted as follows: organic basis, 57 cases or 76%; psychological basis, 18 cases or 24%.

The outstanding signs or types of difficulty are shown in Table II.

TABLE II.

Outstanding Signs or Types of Difficulty.

Manifestation of Difficulty.	Mental Deficiency. (24 Cases.)	Epilepsy. (24 Cases.)	Organic Damage. (9 Cases.)	Difficulty due to Psychological Causes. (18 Cases.)	Total.
Bad temper	9	11	4	7	31
Violence	7	10	1	3	21
Irritability	4	9	5	4	22
Restlessness	5	8	1	1	15
Destructiveness	4	1	1	—	6
Self-injury	5	—	—	1	6
Screaming	3	2	1	2	8
Truancy	5	—	—	2	7
Stealing	2	1	2	1	6
Wandering from home	2	1	—	1	4
Disobedience	1	2	1	1	5
Rebelliousness	—	—	—	2	2
Sullenness	2	2	—	—	—
Untruthfulness	1	—	—	1	2
Impertinence	—	2	—	—	2
Abusiveness	—	2	—	—	2
Tormenting	—	1	1	—	2
Obsessive acts	—	—	—	3	3

The following are some examples from the three major groups of cases.

Difficulty Associated with Mental Deficiency.

D.B., a boy, aged nine and a half years, is very restless and is continually wandering away from home. Sometimes he comes home, sometimes he stays out all night. Punishment is of no avail; he will not play with other children. He is backward at school. He suffered from whooping cough at the age of five and a half years, which affected the left eye. The eye rolled up, and the lid drooped; this may have been associated with brain damage. His intelligence quotient was found to be 76%.

L.A. is a boy, aged seven years. He plays truant and is persistently stealing. His mother says: "He nips things from people's places, especially if they show an interest in him." She cannot trust him out of her sight. He is bad tempered and becomes very excited. He is also backward in speech. He exhibited various tics. His intelligence quotient was found to be 75%.

F.F. is a boy, aged nine and a half years. He is constantly stealing money; punishment is no deterrent. He is backward in speech and at school, being only in the second class. He is excitable and irritable. He acts peculiarly at times. Tics were present and his intelligence quotient was found to be 49%.

G.H. is a boy, aged eleven years. He plays truant and is very restless; other boys say he is "cuckoo". He is very conscious of his backwardness and makes faces as if he were trying to compensate for his deficiency by exhibitionism. His intelligence quotient was found to be 77%.

T.P., a boy, aged two years, "has terrible fits of temper and bumps his head on the floor all day". He screams a great deal for no apparent reason. He is continually wetting. He sat up at the age of thirteen months and walked at nineteen months, and he can only say "mum".

This child seemed to be suffering from fairly severe mental deficiency, and was sent to the Newcastle Mental Hospital.

R. McA., a boy, aged eight years, is very backward; he is in the lower first class. He cannot be taught anything. He runs away from home, and when punished tries to punish himself by biting or burning himself. He is destructive, cutting blankets, sheets and books. He is probably conscious of his defect; he is very sensitive if boys will not play with him. His intelligence quotient was found to be 62%.

Difficulty Associated with Epilepsy.

E.W., a girl, aged thirteen years, has a bad temper, is difficult to manage at home, is abusive and throws things at her mother; she has had fits for the past two years. She was eventually sent to the Reception House.

M.O., a boy, aged seven years, has violent temper tantrums and cannot be trusted to play with other children. He throws knives at his sister. He has minor epileptic fits two or three times daily. His father has the same disposition and a bad temper, and has threatened to shoot the family.

J.M., a boy, aged five and a half years, is restless and hits people. He is irritable and quick-tempered. He has attacks of asthma if he is upset. He had a convulsion when he was six weeks of age and another two months before he was examined. His intelligence quotient was found to be 99%.

H.I., a girl, aged twelve years, wanders away from home and "bites and bashes other children". She is excitable, irritable and restless. She had fits from the age of three to seven years. Her intelligence quotient was found to be 50%.

Difficulty Due to Psychological Causes.

T.B., a boy, aged nine years, of normal intelligence, has become uncontrollable during the past six months, playing truant and staying out late at night. He is impudent to his mother, and punishment makes him worse. His grandmother spoils him; she goes against his mother all the time and continually indulges the boy with money. He recently fell into bad company.

P.B., a boy, aged eleven years, has an intelligence quotient of 98%. He is difficult in every way, being stubborn and resistive. He will "do anything to attract attention. He must always be the centre of the stage, and cries if he can't get his own way. He has always been indulged and was made a big fuss of till his sister came, when he was six years old. He was always jealous of his sister; he fights with her and attempts to choke her if she takes his things."

G.E., a boy, aged eight years, has an intelligence quotient of 93%. He has a bad temper, and was violent towards his sister and brother. He continually runs away from home, and he refuses to go to school. He is jealous of the father and other children having a share in the mother's affection. The father nags the children; the sister holds her own; but the boy cannot, and compensates by his attitude.

V.M., a girl, aged four and a half years, has normal intelligence. She has had screaming attacks for twelve months, lasting for as long as two hours; these began when the other baby arrived. Her grandparents spoiled her. She has attacks of moodiness and will not speak for half an hour at a time. She threatens to leave home. She has no playmates and is over-protected by her mother.

This child's difficulty disappeared after she was sent to a kindergarten school.

J.R., a boy, aged ten years, has an intelligence quotient of 119%. For the past twelve months he has had bad fits of temper and has been morbid at times. He turned against his mother. These symptoms appeared after his mother's second marriage. Someone had told the boy a step-father would ill-treat him; also he was probably jealous of the step-father.

Table III gives an idea of the variety of psychological causes and the specific reaction they elicit in 13 cases.

TABLE III.

Types of Reaction due to Psychological Causes in Thirteen Cases.

Case.	Cause.	Type of Reaction.
A	A very irritable father (a returned soldier suffering from neurasthenia; ill health—rheumatism).	Irritability.
B	The mother was too severe; the child had no pocket money.	Stealing.
C	The father was cruel to the child; he did not want the child.	Irritability and bad temper.
D	Hypersensitivity and asthma; the child was upset by a strict teacher, who caned him frequently.	Bad temper.
E	A domineering disposition; the headmistress upsets her.	Screaming.
F	A hard, dominant mother.	Truancy.
G	The child was spoilt by the grandmother; bad company.	Truancy.
H	Jealousy of sister.	Violence.
I	Nagged by the father, who had been out of work for five years.	Violence, temper, and running away from home.
J	Mother too protective; not allowed playmates.	Untruthful.
K	Over-protective mother; jealousy of sister.	Screaming, bad temper.
L	Jealousy of step-father.	Bad temper.
M	Ill-used by guardian.	Violence, bad temper.

Conclusion.

It will be noted that a wide variety of causes, such as mental deficiency, epilepsy, organic brain disease, parental cruelty, dominance or over-protectiveness, and the patients' own temperamental difficulties, may all cause similar disorders of conduct often amounting to serious antisocial acts. In this series of cases the most common causes of such grave disorders of conduct were either mental deficiency or epilepsy. It is probable that these two factors, that is, mental deficiency and epilepsy, will be found to play a most important part in the

production of delinquency and of crime, and especially of crimes of violence. It will be apparent, then, that if crime and maladjustment are to be prevented, it will be necessary for the abnormal conduct disorders of children to be recognized early and corrected if possible by the treatment of the underlying disease or by the proper education of the patient and parents, and if necessary by the segregation of the patients in special schools or colonies.

Reviews.

SURGERY FOR NURSES.

IN his book "Surgery for Nurses" Dr. C. Wells aims "to introduce the student nurse to the science and craft of surgery in a clear and straight forward manner".[1] The volume contains sufficient description of anatomy, physiology, pathology and of surgical procedures to enable a nurse to follow intelligently and to give understanding and anticipatory assistance to the surgeon. Practical nursing work, such as bandaging and bed making, does not come within the scope of this book, but there are helpful chapters on gynæcology, the eye, fractures and diseases and injuries to bones and joints, the endocrines, anæsthesia, diathermy and cauteries and X rays and radium. In the statement of essentials a few lines frequently suffice, yet the style is not encyclopædic. The illustrations are all diagrammatic and should convey a clear mental picture. There are a number of cross references; these are always helpful to a student. The subject matter is fully up to date and the short, crisp sentences and freshness of style persuade us of the author's gift as a teacher. The attractiveness of the book is enhanced by the clear letterpress and good quality of the paper.

Even the qualified nurse, especially if she has been in a groove, will find profit and refreshment in a few hours' reading of this hand-book.

ANATOMY OF THE LYMPHATIC SYSTEM.

"OF making many books there is no end." In this volume of 250 pages the French anatomist Rouvière has accurately described and faithfully depicted in 129 illustrations the lymphatic vessels and lymph glands of the human body.[2]

At first sight it would appear that a book of this kind was superfluous, but closer study indicates that there are many details described here which could not be included in a standard text-book of anatomy. The minute descriptions of the lymph circulation in the eyeball, in the peri-vascular spaces of the brain and in bones surpass anything which has yet appeared in the usual anatomical literature.

The researches of the author and of his pupils have been freely recorded and the reputation of the French school of anatomists in this difficult field has been maintained and enhanced. The illustrations include not only the original drawings of the author, but a number of classical pictures from Sappey and Cuneo, Sassier, Sateata Mare Andre, Arnould. The intimate relation of lymph glands to nerves is stressed. The lymph drainage of the rectum, the uterus, the tongue is accurately described. The treatment of malignant disease, depending on the use of radium or surgery, involves a careful study of the normal and aberrant types of lymph drainage. In this volume a ready reference is available. Anatomical minutiæ such as the lymphatic drainage of the tympanic membrane and of the Eustachian tube are provided.

A great deal of patient and time-consuming work has obviously made possible the production of this very readable and highly informative monograph. It is recommended to all who desire precision in the study of a subject which is frequently by sketchily understood.

"THE MEDICAL ANNUAL."

"THE MEDICAL ANNUAL" for 1939 has made its welcome appearance.[1] It is, as most of our readers know, described as "A Year Book of Treatment and Practitioner's Index". The editors are Dr. H. Letheby Tidy and Dr. A. Rendle Short, both of whom are well known in English medical literature. This is the fifty-seventh year in which the book has been published. It is perhaps the one book above all others which is indispensable to the general practitioner. Not only, as the title shows, are the latest methods of treatment described, but pathogenesis and diagnosis, particularly of the conditions which have come into prominence in the last twelve months, are discussed.

An interesting contribution comes from Dr. H. Gardiner-Hill, who writes on the present position of sex hormone therapy. This is a subject which is obviously in its infancy and about which medical practitioners will be glad to have reliable information. The author discusses therapy in both the male and the female. He deals first with the preparations used and then with the clinical uses of sex hormone therapy; a final section deals with indications, applications and results. The section on clinical pathology covers ten pages and will repay study by any general practitioner. "Legal Decisions and Enactments of Recent Date" is a section of considerable interest, though the decisions may not all be applicable to Australian law. There is an amusing story of a woman osteopath who was a doctor of science and who was asked by the Medical Defence Union to refrain from using the title of "doctor"; she issued a writ for libel against the union and conducted her own case in the courts. In this section are also important sub-sections on testamentary capacity, the use of X rays in practice, and life insurance and "sane suicide". The sulphonamides receive much attention in an informative section entitled "Chemotherapy of Bacterial Diseases" and in other sections. "Q" fever and the work of Derrick, Burnet and Freeman, published in this journal, receive passing mention. Curiously, there is no special section devoted to virus diseases. Vitamins are shortly discussed in their own section and in one on nutrition and diet. Traffic lights and the conditioned reflexes of motor car drivers are also discussed. There is a full and informative chapter on contact glasses.

It would be possible to mention many more important sections in this most satisfactory publication; but there is no need—medical practitioners know, or should know, the work so well that it requires no further recommendation. The editors are to be congratulated on the high standard of this volume.

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[1] "A Manual of Surgery for Nurses", by C. Wells, M.B., F.R.C.S.; 1938. Edinburgh: E. and S. Livingstone. Crown 8vo, pp. 417, with illustrations. Price: 10s. 6d. net.

[2] "Anatomy of the Human Lymphatic System", by H. Rouvière; a compendium translated from the original *"Anatomie des lymphatiques de l'homme"* and arranged for the use of students and practitioners by M. J. Tobias; 1938. Ann Arbour: Edwards Brothers Incorporated. Demy 4to, pp. 317, with illustrations. Price: $4.00 net.

[1] "The Medical Annual: A Year Book of Treatment and Practitioner's Index", edited by H. L. Tidy and A. R. Short; 1939. Bristol: John Wright and Sons Limited. Demy 8vo, pp. 660, with illustrations. Price: 20s. net.

The Medical Journal of Australia

SATURDAY, JULY 15, 1939.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE PILGRIM'S PROGRESS.

MEDICAL SCIENCE will never be static, for the whole secrets of Nature will never be revealed, and man in every aspect of his being, as well as in the conditions of his environment that make possible the occurrence of disease, cannot stand still. Medical education will therefore always provide cause for argument, planning and counterplanning; and no medical curriculum, however closely it may at the moment approach perfection, can for long satisfy the needs of progress. Many medical teachers and practitioners of wide clinical experience and of mature judgement have written about medical education; and societies and associations of medical men have issued reports. In December, 1933, the Health Organization of the League of Nations issued a comprehensive report by Dr. Etienne Burnet in its *Quarterly Bulletin* and the British Medical Association published a report in the Supplement of *The British Medical Journal* of April 21, 1934. Both these reports were discussed in a leading article in this journal in the issue of August 18, 1934. And we have at the present time a subcommittee of the New South Wales Parliament, twelve persons in all, only two of whom have had any medical training, taking evidence from medical teachers and others on the standard of medical education in the University of Sydney. The report of this subcommittee will be awaited by the medical profession with more than usual interest. It is not, however, to this subcommittee and its work that we wish to draw attention, but to the latest contribution to the subject, the Bancroft Oration of Sir Alan Newton, published in this issue. Sir Alan Newton's choice of subject in Brisbane was most opportune, for the Medical School of the University of Queensland is just, as it were, feeling its feet and its first batch of medical students will before long graduate. His words will, we hope, receive the careful consideration which they deserve, not only in Queensland, whose university has a unique opportunity of setting up a curriculum in accordance with modern requirements, but in other parts of Australia and beyond its borders.

There are several aspects of Sir Alan Newton's oration to which attention should particularly be drawn. The first is that of preselection of the student who will become the future medical attendant of the people, the repository of their confidences, their friend in physical and mental trouble, and their refuge in distress. It is manifestly unfair to the public that men unsuited to these roles should be foisted upon it; moreover, if students cannot be selected before their entry upon medical studies, those who are not suitable should be discovered before they reach the end of the first year of study. Under the present system it is more than doubtful whether this can be done. The possible remedy will be discussed later. The second aspect of Sir Alan Newton's oration has to do with preclinical studies. The idea that the basic sciences, chemistry, physics and biology, should be studied at school rather than at the university is by no means new; and it is possible that in the not distant future some such arrangement will be made. At the same time the whole subject is surrounded by difficulty and any alteration will have to be carefully planned. In this journal, as long ago as October, 1920, the statement was made that the late

Sir Joseph Verco recorded that the student in Adelaide had learned physics, chemistry and biology at school before entering the medical school, and that this arrangement had not been altogether satisfactory. The editorial comment on this statement was that "if schools teachers and the members of the medical faculties were to confer on this and a few other matters, the results might be improved". It may be useful, even after the interval of so many years, to draw attention to a report on the reform of medical education published in this journal on March 27, 1920, over the signatures of Archie Aspinall, H. G. Chapman, J. L. McKelvey, Harold J. Ritchie, F. P. Sandes and S. A. Smith, a committee called together for the purpose by the late Henry William Armit, then Editor of THE MEDICAL JOURNAL OF AUSTRALIA. In this report appears the following statement:

> The education of the medical student will remain unsatisfactory unless a concurrent reform in school education is effected. We consider that the scholar destined to enter the medical profession should be required to study natural sciences as well as English, mathematics, modern languages and classics.
>
> It is necessary to recognize the importance of continued study of the fundamental sciences throughout the medical course, in order that the practical significance of each chapter of these sciences may not be missed. Thus if the student does not enter the chemical laboratory after the first year, he will have forgotten the greater part of what he has learned of organic chemistry by the time he is ready to study the disturbances of metabolism. Again, the value of a well-designed course in the anatomy of the nervous system or in the physiology of the special senses is considerably diminished if a prolonged period is allowed to elapse before the clinical application of this knowledge is made to the study of the brain, spinal cord and nerves. The fundamental sciences on which medicine is based are chemistry, physics and biology. These sciences should be taught in combination with the practice of medicine, surgery and preventive medicine.

There will be few who will cavil at this statement; and it should be possible, if the student comes to the medical school with some knowledge of the basic sciences, to incorporate with his subsequent teaching their detailed practical application.

The two remaining aspects of Sir Alan Newton's oration to which we would refer are his insistence that much of the detail of special subjects should be left for the student to acquire after graduation, and his remarks on unskilled examiners. It would be useful and possibly revealing if universities were to examine proposed examiners on their suitability to act in such a capacity before they were allowed to undertake the task.

Sir Alan Newton's Bancroft Oration should be read in conjunction with a recent important address by Lord Horder, published in *The Lancet* of April 22, 1939. With many of Sir Alan Newton's statements Lord Horder is in entire agreement; in some respects he goes further, and, like most of his considered utterances, this address is stimulating. He defines four educational stages in the approach to medicine—the "general education", the education a student gives himself, his preclinical studies, and his clinical and pathological work. Of these, the first is often inadequate and the second is often neglected. Of general education Lord Horder remarks: "The better—not the more—the better. Better handwriting, better spelling, better grammar, better reasoning." He points out that by taking the natural sciences as part of his school education, the pupil who is going to be a doctor is killing three birds with one stone—he is learning important facts upon which his later studies can be grafted, he is developing a laboratory technique and he is training his powers of observation. In self-education the student "has an enormous amount to do and very little time in which to do it". General reading, conditioning his general attitude to life, is vital. Lord Horder would not have the general reading too meticulously planned. He would include logic among the subjects read. Accuracy in observation, forbearance in the use of words, a worship, almost, of the value of exact measurement and careful reasoning are in Lord Horder's opinion the things which characterize the scientific spirit; and who will gainsay him?

Lord Horder refers to the embryo doctor as a pilgrim and to his progress through a country which has changed a good deal of late, and changed rather rapidly. Like that other Pilgrim, he carries a load, partly "original" and partly acquired, and he has to overcome many an obstacle and conquer many an adversary. Medical education should be so planned that he is well equipped for his progress, that he is able to cope with his adversaries and

that his obstacles are not insurmountable. Perhaps the main difficulty in Australian medical schools at the present time arises from the large numbers of students; and the group, as pointed out by the Vice-Chancellor of the University of Melbourne (quoted by Sir Alan Newton), easily becomes a mob. Sir Alan Newton shows that in the latter years of his course the student receives group education, and, as many graduates can testify, this often becomes individual tuition. It is, however, in the early years of his course that the student needs not only group education, but someone to whom he can bring his difficulties, someone who can sympathize with his needs and possibly show him how they may be met. Under the present system, no matter what curriculum is devised, this will not be possible without an enormous increase in the number of university teachers. It can be done only by the appointment of a full-time dean of the faculty of medicine. At the present time the dean of any medical faculty is first of all a teacher and then a dean. His first care is necessarily his teaching; he has very little time left for interviewing students. The dean of a non-medical faculty in one of the Australian universities recently stated that he had tried to carry out his duties as dean in the way in which he thought necessary. He soon found that so much of his time was taken up in interviews with students and in attempts to solve their difficulties that he had insufficient time for his ordinary teaching duties: he had to revert to the usual practice and be merely a figurehead with certain administrative duties. A full-time dean would be able to learn something of the first-year students and ought to be able to help in the preselection during the first year mentioned by Sir Alan Newton. He would, among his other duties, also have a watching brief to see that students were not overloaded with detailed information by lecturers who are determined that their subject at least shall be given in full. Perhaps the time will come when the universities of Australia will collectively review their medical curricula; and when they do, the question of the appointment of full-time deans should be considered.

Current Comment.

CHILD GUIDANCE AND DELINQUENCY.

THE papers by Dr. John McGeorge and Dr. D. W. H. Arnott published in this issue should be of interest to every general practitioner. Most practitioners have to deal at some time or other with delinquent or so-called difficult children. Even if they do not aim at treating these children or at supervising their treatment, they will often be called upon to indicate where and how treatment may be obtained. It is therefore necessary that the implications of this subject should be understood; and its comprehension requires careful study.

Most opportunely there appears the account of a discussion held in England at the quarterly meeting of the Royal Medico-Psychological Association on February 22, 1939,[1] on the present status and functions of the child-guidance movement in Great Britain and its possible future developments. Many points in this discussion are in agreement with those brought out at the Sydney meeting, but some of the suggestions are more far-reaching. The principal paper was read by Douglas R. MacCalman, who is Crombie-Ross Lecturer in the University of Aberdeen. MacCalman first of all referred to the early development of child-guidance work and described the introduction of the psychiatric social worker. He also referred to the work of the educational psychologist and of the psychiatrist or medically trained psychologist. What is often forgotten in connexion with child-guidance work is that it calls for special training and special knowledge; even an intense interest in the subject and a knowledge of the subject known as psychology are not sufficient. It must be stated quite clearly that a knowledge of psychology is not sufficient equipment for this work; a psychiatrist alone is fitted for it. MacCalman regards the qualifications and training necessary for a psychiatrist as being at present ill defined. We are at one with him, however, in his statement that the psychiatrist should be well trained in general medicine. He should, moreover, "be a well-balanced individual who is making a satisfactory adjustment to life, and one who is not taking up this branch of medicine to satisfy his own personal cravings". His training in psychiatry should in MacCalman's opinion include a thorough training in the works of modern schools of dynamic psychiatry, clinical experience with adults both in mental hospitals and out-patient departments and the obtaining of a diploma in psychiatry. "The psychiatrist should have the ability to handle children of all ages and of both sexes without undue difficulty or emotional disturbance on his part, and he should be thoroughly conversant with the various techniques, such as play therapy, which apply to children of different ages and types." MacCalman adds that treatment

[1] *The Journal of Mental Science*, May, 1939.

is at present very much an art in which success depends on the skill with which the therapist uses his personal contact with the child. He is also right when he states that treatment is hampered by lack of knowledge of behaviour and personality difficulties themselves, and also because our understanding of what is normal in emotional development is incomplete and meagre. Obviously treatment in a child-guidance clinic is both time-consuming and costly. MacCalman's statement that a clinic with a single team is able to deal with only some two to three hundred cases in each year, is not very helpful, for he does not indicate whether this team will be employed continuously or not. Although the number of children treated at a clinic may not be large, it is clear that "a wider sphere influence is . . . maintained by the clinics through interesting individuals and social agencies in the preventive side of the work, and by demonstrating to the community by the detailed study of a few children the needs of other children less seriously maladjusted".

William Moodie, from the London Child Guidance Clinic and University College Hospital Clinic, said that in child-guidance work there should be no hurry. He found it possible to deal with only four new cases in a morning session of two and a half hours. He also insisted that it was useless to try to carry on any psychological work if one was emotionally upset or emotionally interested in it.

W. J. T. Kimber raised a question of the greatest importance—the possibility of child-guidance work being undertaken in connexion with a mental hospital. In certain Australian mental hospitals members of the staff act as medical officers to out-patient departments of general hospitals and undertake the mental treatment of patients who seek advice. We may well ask why these extramural activities of departmental medical officers should not be extended to the child-guidance clinic. Kimber believes that the association of child guidance with mental hospital work is of real value; he said that he was sure it was of value to the staff at Hill End, St. Albans, and that they were all better psychiatrists for having undertaken it. One Australian psychiatrist has said bluntly that the association would have a good influence on the mentality of institutional medical officers. Apparently at St. Albans the children come to the mental hospital. Kimber said that he did not want it to be thought that he advocated the mental hospital as the ideal place for child guidance. To use a mental hospital for this purpose is wrong. A general hospital is the place for such an association. There should be no difficulty about the detailing of suitable mental hospital officers to attend general hospitals two or three afternoons in the week as clinical assistants in the out-patient department. Obviously all mental hospital medical officers would not be suitable for duties; they would need to be selected with considerable care. And this brings us to a suggestion made by MacCalman that the institution of a diploma in child psychiatry would provide an opportunity for the study of such subjects as pædiatrics, the emotional development of normal children, the psychology of the family, as well as for teaching in the theory and practice of child guidance. With this suggestion we cannot agree. Even in a country with such a large population as Great Britain the subjects listed by Kimber could and should be made part of the course for the diploma in psychiatry. (Pædiatrics should be part of the medical officer's general training.) Further, if there is to be a close connexion between child guidance and mental hospital work, and we believe that there should, it is unnecessary to set up child psychiatry as something different from or foreign to psychiatry as applied to adult persons.

It must not be thought that child-guidance clinics are lacking in Australian communities. Many are already doing useful work and the cooperation of intelligent laymen is being obtained; this cooperation is most valuable. At the same time much missionary work in child guidance remains to be done. Many important aspects remain which have not been mentioned in this short discussion. We may conclude with the words of MacCalman:

> It should be clear that until there is a reasonable chance of every child who shows symptoms of instability receiving treatment, the mental health services of this country cannot be regarded as being efficient or complete, and that reasonable chance of receiving treatment will not be possible unless child guidance becomes an integral part of the mental service as a whole, and not, as it might become, a foreign body impressed upon these services.

THE RELATION OF VASCULAR DEFICIENCY TO OSTEOARTHRITIS.

IT is commonly held that osteoarthritis is in part an expression of senescence in a joint, and it is often more or less popularly described as grey hair of the joints. The name "degenerative arthritis" to some extent also favours this ætiological factor. It has also been observed that the relevant nutrient arteries in osteoarthritic joints are frequently found to show degenerative changes, although, of course, it must be recognized that age depends upon other factors than the mechanical ones governing blood supply. The relation of stress, and in particular injury, to osteoarthritis is also well known; this may depend upon the fact of repeated trauma or the grosser disturbances due to a disruption of the blood supply. The familiar example is the arthritic changes occurring in the shoulder joint after dislocation with rupture of the capsule in an elderly person. It must be admitted, however, that all writers do not whole-heartedly support this doctrine of a predominantly vascular cause of osteoarthritis. Although arteriosclerotic changes are certainly found in the blood vessels supplying joints which are the subject of degenerative changes, a similar vascular condition can also readily be demonstrated in the joints of persons in middle life who present neither signs nor symptoms of arthritic disease.

David H. Kling has recently published some work on this subject and bases his conclusions upon the study of the joints and blood vessels of the lower extremities of thirteen patients in whom amputation had become necessary for gangrene due to arteriosclerosis or *thromboangiitis obliterans*.[1] He believes that the conclusions drawn from such a study are more helpful and reliable than those depending on experimental evidence. Other workers have produced damage to the articular cartilage of animals by various means; but, as Kling points out, the changes produced may resemble osteoarthritis but may not be identical with this disease in the human subject; further, experimental results obtained by methods that are rather violent and act over a short period of time are hardly comparable with lesions produced gradually by some stealthy pathological process. The results of Kling's study are rather surprising. In cases of advanced *thromboangiitis obliterans* the synovial vessels may show well-defined lesions; but in cases of arteriosclerosis, even of a grade severe enough to produce gangrene, the synovial vessels are relatively unscathed, and this immunity is supposed to be due to the degree of movement possible to the tissues through which the vessels run. The synovial membrane was not found to show striking changes, and only in two cases out of the thirteen was a pronounced osteoarthritis present. Slight erosions of the articular cartilage were found in all cases in which the age exceeded forty years. These findings appear to show that even advanced vascular changes in the limb do not *per se* produce osteoarthritis. Kling points out that there are other factors in the degeneration of joint surfaces, such as wear and tear, repeated trauma, possibly some constitutional inferiority of the bone and cartilage, and, lastly, endocrine disturbances. The influence of the menopause in women is well known as being a factor of some importance, and Kling also draws our attention to the influence of the hypophysis on the growth of cartilage and bone. In support of his contention that vascular disturbance is only a secondary factor in osteoarthritis, he further points out that variations in blood pressure and blood flow and changes in the skin capillaries are not more common in sufferers from osteoarthritis than in persons belonging to the same age groups; moreover, he believes that treatment which aims at augmentation of the local circulation is not likely to give more than temporary symptomatic relief. Most clinicians will surely agree with this opinion; but, of course, it must be remembered that many of the troublesome symptoms complained of in such cases are not only due to osteoarthritis, but are referable to recurrent attacks of fibrositis, which are much more susceptible to local therapeutic measures. Kling thinks that protection of the affected joints by rest and avoidance of undue strain and weight bearing are much more important factors in prophylactic treatment. He ends by hoping that future advances in endocrine therapy may help in combating this crippling disease; but it must be admitted that at the present time this hope has not been fulfilled, and indeed its realization seems very nebulous and far off.

[1] *The American Journal of the Medical Sciences*, March, 1939.

ANOREXIA NERVOSA.

THE mysterious disorder known as *anorexia nervosa*, considered in these pages on May 20, 1939, in the light of a communication by H. B. Richardson, presents an as yet unanswered conundrum in ætiology and a baffling problem in treatment. It has been regarded at various times as neurosis, hysteria, psychosis and endocrine disorder. Grace Nicolle applies the term "pre-psychotic anorexia" to a group of conditions in which she includes *anorexia nervosa*.[1] She regards *anorexia nervosa* as an early manifestation of *dementia præcox*, and she suggests that it has its origin in endocrine imbalance. She records a case in which ovarian hypofunction appeared to be the prime ætiological factor. Nicolle does not agree with the view that *anorexia nervosa* is an hysterical manifestation; she states that a "mono-symptomatic hysteria" is not a likely occurrence. Further, an hysterical person "makes parade of her inability to eat and undoubtedly eats when it suits her; the anorexic tries to dissimulate the fact that she does not eat". The hysterical patient tries to elicit sympathy; the patient with *anorexia nervosa* does not. The "purpose of the anorexic to starve herself is of fundamental importance". Hysterical and anorexic persons react differently to isolation; "emotional neutrality in the environment will make the hysteric eat in order to escape to one more congenial to her purposes"; the subject of *anorexia nervosa* will eat only when under strict supervision; "it is as though the hysteric plays a drama to her environment and the anorexic to herself". Nicolle's patient, after recovery from anorexia and after the establishment of the menstrual function, still appeared to be mentally unstable. Her mental processes had a "distinct schizoid tendency". In her final university examinations she wrote an essay "savouring of mad genius; in an endeavour to present the cosmic implications of tragedy she soared away into the nebulous realms of modern physics and treated the fourth dimension with a familiarity Einstein might envy". The patient still at times requires ovarian hormone therapy, to which she responds mentally and physically. Nicolle remarks that "when an anorexic regains normal weight she does not attain a graceful, attractive figure, but shows a tendency to puffy lumpiness", suggesting thyreoid deficiency but unaffected by the administration of thyreoid extract. She postulates "a faulty state of tissue metabolism which interferes with the normal signs governing the sensation of hunger". Nicolle's views will not find universal favour; but they are supported with sound argument and must at least command respect.

[1] *Proceedings of the Royal Society of Medicine*, January, 1939.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Tubercle Bacilli in Dressed Poultry.

WILLIAM H. FELDMAN (*The Journal of Infectious Diseases*, November-December, 1938) have examined spleens from 125 fowls obtained from a meat market where the fowls were dressed before sale. The birds were all in satisfactory condition and showed no evidence of disease. The whole spleen was emulsified and cultures were made from one cubic centimetre of emulsion. Four positive cultures of tubercle bacilli were obtained on egg medium; all the bacilli proved to be virulent for rabbits and guinea-pigs, and were of the avian type. The author discusses the importance of a food supply free from disease, and the frequency of transmission of avian tuberculosis to swine. He states that in districts where avian tuberculosis is frequent as many as 15% to 20% of the carcasses of swine submitted to *post mortem* examination show evidence of infection with avian tubercle bacilli. He suggests that fowls should be reared in a non-tuberculous environment, and stresses the fact that no practical method of *post mortem* inspection will reveal the presence of tubercle bacilli in the absence of gross lesions.

Sulphanilamide and Bacillus Necrophorum in Rabbits.

ELIZABETH S. HEMMENS AND A. M. DACK (*The Journal of Infectious Diseases*, January-February, 1939) have studied the effect of sulphanilamide on experimental infections with *Bacillus necrophorum* in rabbits. They chose this organism because of the ease of access of the lesion and the fact that it could be measured in its progress. Two strains of the organism were used, one bovine and one human in origin. In the experiments with the bovine strain rabbits weighing 3·0 kilograms were injected with 0·5 cubic centimetre of broth culture beneath the skin of the abdominal wall and given 0·5 gramme of the crystalline drug in a capsule twice a day, a beginning being made at various times after inoculation. All untreated control animals died in a period of five to twelve days from spreading necrosis of the abdominal wall; but the lesions did not in any case break down or drain on the exterior. The effect of the drug on treated animals was to localize the lesion, and it did not spread so long as the drug was continued. If regression had begun withdrawal of the drug did not cause relapse, but healing went on; while if the lesion were not regressing, withdrawal of the drug was followed by spread. In most cases the abscess opened and drained to the exterior. The human strain of *Bacillus necrophorum* was less virulent and took longer to produce similar results. Histological studies showed that in the untreated animals the tissues were invaded along the small blood vessels and necrosis occurred, and large numbers of organisms could be seen; in the treated animals there were a wall of fibrous tissue, great exudate of leucocytes and a smaller number of organisms. The authors draw no conclusion as to the mode of action of sulphanilamide; but as the organism used is known not to produce a soluble toxin and as there were fewer organisms in the treated lesions than in the controls, they suggest that there may be an action on the bacilli rather than on the tissue.

The Pleomorphism of the Tubercle Bacillus.

P. HAUDUROY (*Revue de la Tuberculose*, February, 1939) describes a method for lifting a bacterial pellicle entire and undistorted from the surface of a liquid culture medium for study. The culture is made in a beaker, and the liquid is siphoned away till the pellicle reposes on a thin glass disk lying on a handled lifter at the bottom of the vessel. The author summarizes the recent literature on the pleomorphism of *Mycobacterium tuberculosis*, and describes the non-acid-fast phase in the natural history of the much more rapidly growing *Mycobacterium phlei* and the architecture of its colonies.

Chemotherapy in Virus Diseases.

EARL B. MCKINLEY, JEAN SINCLAIR AND ELLEN GRAY ACHREE (*The Journal of Infectious Diseases*, January-February, 1939) have studied the effect of the sulphanilamide drugs in virus infections in animals. Previous work with poliomyelitis virus and the virus of rabbit fibroma and myxoma has not indicated any beneficial effect from the doses used, as both control and test animals developed the respective diseases. In the present experiments three drugs were used, "Prontosil", sulphanilamide and sodium sulphanilyl sulphanilate. The dose given was 0·5 gramme per kilogram of body weight, the first being given forty-eight hours after inoculation with virus. The viruses used were those of rabbit myxomatosis, rabbit fibroma, herpetic encephalitis, choriomeningitis and St. Louis encephalitis. In no instance with the dosages used were any significant beneficial results obtained, while in one group, where the time limit was reduced before the drug was given and a smaller dose of virus was used, there was a greater proportion of survivors among both control and test animals. The authors observe that a lethal dose of virus was used in the experiments and that a definite attempt was made to allow the virus to establish itself before the drug was given, in an attempt to reproduce the conditions of natural infection. They discuss the method of action of the drugs used against streptococci and the difficulty of applying such observations in virus diseases where no such findings are possible. They suggest that in the group in which some animals survived when the drug was given after a short period, it may have destroyed the virus before it had become established in the cells of the test animal. They express the opinion that the failure of the sulphanilamide group of drugs in virus diseases as a rule may be due to the intracellular nature of the infection as contrasted with the intercellular nature of the majority of bacterial infections.

Hæmolytic Streptococci in Scarlet Fever Patients and in School Children.

J. H. BAILEY (*The American Journal of Hygiene*, March, 1939) has made a study of the types of hæmolytic streptococci found in scarlet fever patients and in grammar school children. Cultures were made from the throats and noses of 243 patients, and from the throats of 710 children from three different schools. Of these schools, one had had an outbreak of scarlet fever the previous winter, one was undergoing a small epidemic at the time, and one had not had scarlet fever. Typing of organisms was carried out according to Griffiths's method, and the preparation of toxin from all strains was attempted. It was found that in three-quarters of the cases of scarlet fever Types I, II, III, IV and VI of Griffiths were present, and of 19 cases in which the infection was mixed these types were present in nine. The incidence of complications in the different types indicated no pronounced variation in virulence; but it was noted that of the five deaths in the series four were due to Type II infection. The cases in which complications did not occur in hospital gave evidence of as pronounced a cross-infection as those in which complications had arisen. Type VII, originally isolated by Griffiths in a case of puerperal fever, was present in seven cases of scarlet fever. Among the school children 91% of cultures were of the types found in scarlet fever, and of these, 87·9% produced toxin, although some were weak toxins when tested on white rabbits which reacted to the Dick test. There was a great similarity of distribution of types in the three schools, in spite of the different histories. Type VII was present in four children only. The author expresses the opinion that the change in type found in different cultures from the same patient does not suggest that cross-infection had occurred, but that it had been produced by long residence in an immune host. He holds that the high carrier rate of toxin-producing scarlet fever strains of hæmolytic streptococci in healthy school children constitutes a

reservoir of infection in the community, since only 7% of carriers studied harboured strains which were infrequent causes of scarlet fever.

HYGIENE.

Schick Reactions in Medical Students.

H. C. PULLEY AND MOYER S. FLEISCHER (*American Journal of Public Health*, July, 1938) state that during a period of seven years every sophomore in the medical school of St. Louis University was tested for reaction to Schick toxin. Of 816 students, aged between twenty-two and twenty-seven years, 64·5% did not react. Of those resident in large communities, 66·2% did not react; of those from the smallest communities, 53·3% did not react. Of those actively immunized, 68% in larger and 50% in small communities did not react. It is suggested that the lack of exposure to subclinical contact with diphtheria bacilli is responsible for the loss of immunity in protected groups. The statistics of the seven years' investigation show that the number of persons who do not react to the Schick test among those not actively immunized has steadily decreased. The need for 100% immunization in childhood is emphasized.

Cancer in the United States Navy.

SIGISMUND PELLER AND CHARLES S. STEPHENSON (*The American Journal of Hygiene*, January, 1939) have made a study, covering eight years, of 320 cancer deaths in a yearly personnel of approximately 140,000 persons under constant medical supervision. None of the internal cancers were noted in the routine physical examination, and 14% of the fatal cancers were not discovered until autopsy. In spite of early adequate treatment, non-superficial cancers ran a rapid course. Fatal cases of internal cancer were diagnosed about five months after onset of the first symptom and lasted another six months in the young and eight months in the older patients. Actually one-third of the fatal internal cases were diagnosed within two months of onset; but the duration after diagnosis was about the same. Skin and lip cancer were more than three times as frequent as in the civil population, on account of the greater exposure of the naval man to sun, salt water and wind. Internal cancers were much less frequent—about one-third of the civil figure. The low mortality (12% of skin and lip cancer) and the low frequency of incidence of internal cancer reduce the mortality rate from all types of cancer in the navy to about 60% of the figures in New York for the same age groups. Commenting on Virchow's conception that additional irritation produces additional cancer, Peller suggests that increased irritation of one part of the body, with a parallel increase of cancer frequency in that part, results in a decreased frequency of cancer in unexposed parts. If a changed distribution in the body thus results from external irritation, it is further suggested that, as in the navy, increased exposure and irritation of the skin may transfer a part of the future internal cancers, which are fatal, to the skin, where they are relatively curable.

Climate and Metabolic Stress.

C. A. MILLS (*The American Journal of Hygiene*, May, 1939) states that urbanization must be dealt with independently in climatic studies. Though the evidence is conflicting, little doubt exists that the basal oxygen consumption is related to external mean temperature levels and the ease of heat loss. Seasonal fluctuations are widest in middle low temperature regions; clothing and heating of houses compensate in colder zones. Regional difference in metabolic stress shows itself most in the greater activity but lower body efficiency in cooler climates; the tropical worker is a more efficient machine with a slower output. Glucose is used up for 85% of body combustion, so that diabetes may occur in metabolic stress. In the United States of America the figures for deaths from diabetes among the white citizens of rural districts reach a maximum severity in middle temperature localities rather than in the severe northern cold or in the depressing southern warmth. Similar findings are given by white urban communities independent of size. In negro populations the figures are increased the further north the locality. Exophthalmic goitre and pernicious anæmia present similar climatic associations. Cardiac stress and temperature level bear an inverse relationship. The stress in the upper half of the Mississippi valley exceeds that in the lower half and suggests an association with the severity of storm changes.

Fleas as Vectors of Plague.

C. R. ESKEY (*The American Journal of Public Health*, November, 1938) during the past two years has tested 1,200 fleas from wild rodents. Twenty different species were successfully infected with plague, but only eleven species—nine from wild rodents, prairie dogs, chipmunks and ground squirrels—transmitted the disease to guinea-pigs. The guinea-pig is infective only for a few hours before death and only a small percentage of the fleas biting even at that time successfully transmitted the infection. The flea is not infective till œsophageal obstruction and regurgitation occur. This may be in a few days or not for four months—in from 5 to 147 days. The flea usually dies within forty-eight hours of the obstruction. Blocked fleas are remarkably voracious feeders. Virulent organisms may be passed in the fæces for as long as four weeks. Although infection is possible from these wild rodent fleas during sylvatic plague, the domestic rat flea, *Xenopsylla cheopis*, is far the most active and dangerous vector of plague. They existed from fourteen to fifty days after infection.

The Basophilic Aggregation Test Applied to Cement Workers.

F. R. HOLDEN AND C. E. ROLSTON (*The Journal of Industrial Hygiene*, January, 1939) endeavoured to confirm previous work which reported that in 80% of cement workers preformed stippled cells numbered more than 200 per million. They investigated 136 workers, using McCord's technique. Sixty-three of the subjects had been exposed to dust, while the other 73 had not worked in a dusty atmosphere. These 63 men show no significant increase in the basophilic aggregation count, and nothing suggestive of plumbism was found.

Active Immunization against Pertussis.

PEARL KENDRICH AND GRACE ELDERLING (*The American Journal of Hygiene*, May, 1939) have studied 4,112 white children, aged between eight months and five years, in a population of 168,850 at Grand Rapids, to observe the effect of smooth pertussis vaccine given before exposure to infection; 1,815 persons tested and 2,397 controls were followed up for four years. The respective pertussis attack rates were as follows: test group, 2·3%; control groups, 15·1%. The percentage of light and of severe attacks was 76·7 and 3·8 in the test group and 26·8 and 13·1 in the control group. Of the 297 in the test group exposed to infection, 12·8% contracted the disease, and of the 273 controls similarly exposed, 68·5%. Statistically these differences are significant, indicating that substantial protection was given to the infected group.

The Physical Fitness of School Children.

SUSAN SOUTHER, MARTHA ELIOT AND RACHEL JENSS (*The American Journal of Public Health*, May, 1939) have examined 713 white boys and girls between six and seven years of age and have made a comparison of the physicians' findings as to malnutrition, the annual gain in weight and the four indices of body build—the Baldwin-Wood height-weight scale, the Pryor width-weight scale, the nutritional status of Franzen and the A.C.H. index. These indices corresponded to the findings of the physicians in 63%, 28%, 5% and 10% of cases respectively. Children with unsatisfactory gain in weight were best indicated by the Baldwin-Wood test (29%). The authors suggest that the clinical estimate is best supplemented by the relative gain in weight.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on May 25, 1939, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. GEORGE BARRON, the President, in the chair.

The Difficult Child.

DR. J. A. H. MCGEORGE read a paper entitled "Juvenile Delinquency" (see page 94).

DR. D. W. H. ARNOTT read a paper entitled "The Difficult Child" (see page 105).

DR. P. L. K. ADDISON said that in the period of time for which he had been in practice he had dealt with a number of children aged from twelve to fifteen years, and had found that they fell into two distinct groups, both of which exhibited troublesome states. The first was a calcium deficiency group, in which the children had become of troublesome disposition, and the second group exhibited a certain degree of hyperthyreoidism. Sometimes the two were combined. Dr. Addison said that the occurrence of such cases had been noted in certain regions, and he wondered whether Dr. Arnott had had experience of them. Dr. Addison had met with such children, and they did respond to treatment. Children suffering from calcium deficiency were troublesome at home, fought with their brothers and sisters, had night terrors and sometimes early sexual precocity. In the short period of ten years in which Dr. Addison had tried to classify these children the response to treatment had been good enough to offer encouragement.

DR. F. S. STUCKEY said that in expressing his appreciation of the two papers he would like to ask one question: whether the problems of these troublesome, difficult children were in any way connected with the problem of the only child or whether, on the contrary, such children came from large families.

DR. E. H. M. STEPHEN said that one of the joys of life was to see other people doing plenty of good work and doing it very well. Both speakers had shown by their papers that they had done such work. The physician was a person deserving glory for various reasons; he had to take long histories and have much patience. The two speakers were evidently super-physicians, because the histories they had both described had shown that they both knew what it really meant to sit down determined to "last the distance"; so many hours of patient work were obviously involved. He himself had, of course, also found that the fault in such cases very frequently lay with the management of the child by its parents, so that the problem of treatment was a somewhat complex one. What he had heard that night gave him heart to approach hopefully even the more obstinate cases of the difficult child.

DR. CEDRIC SWANTON congratulated both speakers. He had found an interesting point in a report published in the jubilee year of American study of child psychology. The one positive finding in fifty years of study was that children had to be ruled; but they had to be ruled through affection, not through fear. In the first table shown by Dr. Arnott there were no behaviour problems whatever among neurotics. Children suffering from neuroses and habit spasms *et cetera* presented no difficulties of behaviour at all. The difficulties had been converted into conversion symptoms of anxiety, and there was no need for conduct disorders.

DR. W. C. PETHEBRIDGE thanked the two speakers for their clear presentation of material covering an enormous field. He asked them whether they could make some observations on the disposal of the particularly difficult or deficient children. He had made representations to the Child Welfare Commission of Enquiry on the subject some time earlier, and it had been pointed out in the commissioner's report that about £45,000 of trust funds could be justifiably earmarked for that purpose. He understood that some further consideration had been given to this project.

PROFESSOR C. G. LAMBIE said that he had enjoyed listening to two papers on a subject which he had not much opportunity to study. It had been his lot to deal more with the difficult adult than with the difficult child. As a result of the good work that was being done with difficult children, it was possible that the number of difficult adults would become fewer and fewer as time went on. Much work had been done in recent years. Study of the order of children in the family, of the attitude of the parents to the child and towards sex life *et cetera* had combined to throw much light on the various aspects of mental deficiency and abnormal behaviour. One matter required attention, and that was temperament. Some children could be good more easily than others; this fact was illustrated in different members of the same family. It could not be attributed to the factors mentioned before—attitude of the parents to the child and to sex life *et cetera*—although they did play a part. If an attempt were made to study children and to deal with them according to their peculiar temperaments, at least some light would be thrown on their abnormal behaviour.

DR. GRACE CUTHBERT expressed her appreciation of the two papers. She asked the speakers to bring forward some of their methods of dealing with some of the simpler cases of difficulty that were often met with in general practice. Some of these children might respond to treatment by a general practitioner, and the ideas of Dr. McGeorge and Dr. Arnott would be interesting.

DR. OLIVER LATHAM said that the speakers had hardly had time to deal with the point brought up by Professor Lambie—the traits which children might inherit from either parent who had a very strong bent in one direction or a very strong character. Dr. Latham instanced an occurrence when he was going home to England. One of the greatest pilots of the Australian Air Force was shot down after bringing down many German aeroplanes. He was the best pilot, and also the worst tempered; the undercarriage of his aeroplane had to be twice as strong as all the others, because his impatient temper would not allow of his landing correctly. His child spent most of the time on the ship bumping his head on the deck. The child was quite an infant, yet no one could stop him. Dr. Latham thought that sometimes difficulties of children could be explained by an extraordinary urge or emotional trend, inherited from parents who had very strong urges or tempers, which came out in the child before he had had an opportunity of learning to control it. These children had greater difficulty in controlling their emotions than ordinary children, because this strong urge made their task greater.

DR. E. HASLETT FRAZER added his appreciation of the papers. He said that he had been glad to notice that Dr. McGeorge had finished by saying that more attention should be paid to the parents, by way of prophylaxis. Dr. Frazer was in entire agreement. It was the attitude and mien of the parent that the child picked up and reflected like a mirror. What words or actions the parent actually expressed in a moment of temporary irritation or anger did not matter at all; the basic unconscious attitude that the parent displayed was the important thing. This was dependent on many factors; it might be dependent on financial anxiety; the parents might feel that they had one too many children, and as a result the child might think it was not wanted. Dr. Frazer said that, looking to the future, he felt that for the production of healthy children eugenic selection was necessary. Then all parents or potential parents should undergo certain courses in psychological training—courses in bringing up children. This was a vital essential for the well-being of a country. It was a simple matter to get married and have children, but most people had no conception

whatever of how to bring up their children. Dr. Arnott had dealt with the physical side of the problem and Dr. McGeorge with the psychological side; Dr. Frazer agreed that both were important. Referring to Dr. Addison's remarks concerning calcium deficiency, Dr. Frazer said that he had noted it, though it was not very obvious in calcium and phosphorus blood tests. Yet the nervous system responded well to calcium therapy, with, of course, the necessary vitamins, and a good many of the minor anxiety symptoms subsided.

DR. GEORGE BARRON, from the chair, said that the papers and the discussion had been most interesting. Cases of difficulty could almost be divided into two classes: those due to heredity and those due to environment. Dr. Barron had been interested in hearing some time earlier a statement from the Director of Social Welfare to the effect that no child who had been through a nursery or kindergarten school had ever been before the Children's Court for delinquency. Only about 1,500 children were able to attend kindergarten schools; this number was about 50,000 or 60,000 less than the number of children who needed to attend them. If the number were increased there would be far fewer delinquent children.

Dr. McGeorge, in reply, thanked those who had contributed to the discussion. In reply to Dr. Addison's question as to whether the position of the child in the family made any difference to its behaviour, Dr. McGeorge said that in the indulgent home there was the single child, in the poorer homes there were several children; but delinquency was just as rife among the poorer children. Apparently it did not matter a great deal in what position the child came in the family. Referring to Dr. Stephen's comments on the management of the difficult parent, Dr. McGeorge said that most child-guidance clinics had a woman social worker, as no mere man would be brave enough to tell an irate mother how to bring up her child. Dr. McGeorge agreed with Dr. Swanton on the necessity for ruling children with affection and sympathetic understanding; such a course would have much more effect than the inspiration of fear. Fear inspired lying, for the child lied to hide his offence and to avoid punishment. With reference to Professor Lambie's comments on the difficult adults, Dr. McGeorge said that the parents were really the problem children, and he could offer no solution of the question, although he had given it much study. All human beings were a compound of more or less harmoniously balanced instincts. The dominance of different instincts gave rise to differences of temperament among the members of the one family; one would be aggressive because of the dominance of the instinct of pugnacity, another timid under the influence of the instinct of flight and the accompanying emotion of fear. With regard to Dr. Latham's remarks concerning inherited tendencies, Dr. McGeorge said that the environmentalists were out of favour; but even so, he thought environment the greatest single factor in delinquency. The suggestion of heredity implied that little could be done in these cases and was really a defeatist attitude. Psychopathic tendencies in the parent were a source of delinquency. A child in contact with a neurotic mother must suffer nervously. If the child was taken away from the mother and put in the care of a responsible relative, it improved. There were many instances of children who had done well when brought up by the grandmother. The solution of the problem was often to get the child away to such a relative. As Dr. North had pointed out in his paper "Psychiatry of the School Period", a child quite unconsciously reacted to some emotional stress in the parent. For example, the mother might complain of a supposed insufficiency of milk for the child's needs; she might be very worried and anxious. The child felt the atmosphere of fear and refused the milk. The mother then thought that something ailed the child physically, whereas the disorder was really psychological. Dr. McGeorge thought that it would be impossible by any course of instruction to make people indulge in eugenic selection. They might listen to advice, but would disregard it when their own feelings were concerned. The fundamental problem was always the problem parent. If parents could be educated by child-guidance clinics, such as those connected with the Royal Alexandra Hospital for Children and the Department of Public Instruction, there would be some hope for future generations.

Dr. Arnott, in reply, thanked all those who had spoken kindly of his paper. He said that in his paper he had purposely confined himself to the sub-group of difficult children who were suffering from severe difficulty and were not amenable to ordinary methods of treatment. It would be impossible to deal with all types of difficult children, as most children who were physically ill or generally unhealthy might be considered difficult at times. Most normal children could stand almost any amount of bad handling without ill effect in the long run, but the child with an abnormal disposition was badly affected (in this series 7% of cases). In reply to Dr. Cuthbert, Dr. Arnott said the main causes of minor difficulty were ill health, deficient diet, which led to instability of the nervous system, lack of sleep, lack of sufficient exercise in the open air, and irritable, unhappy and pleasure-seeking parents. In the first three or four years of a child's life the nervous system expanded and matured very rapidly, and should be, as far as possible, protected from unnecessary strain. Probably only during this time was it vulnerable to dietary deficiencies and the toxins of disease. Once myelination was complete, the nervous system, he thought, became more or less immune to the poisons of most diseases, with perhaps the exception of influenza. The majority of the psychological disorders automatically cleared up under the socializing influence of the nursery and ordinary schools.

A MEETING of the Victorian Branch of the British Medical Association was held at the Warrnambool and District Base Hospital on May 6, 1939, DR. F. L. DAVIES, the President, in the chair. Part of the report of this meeting appeared in the issue of July 8, 1939.

Stone in the Common Bile Duct.

DR. H. I. HOLMES showed a married woman, aged thirty-two years, suffering from stone in the common duct associated with some unusual features. He said that he had seen the patient first on February 9, 1939, when she was deeply jaundiced and had been having attacks of abdominal pain for a period of several weeks. The urine was deeply bile-stained and the stools were clay-coloured. The patient was kept under observation for ten days without improvement. Ten cubic centimetres of calcium gluconate had been injected, and on the next day Dr. Holmes had operated through a subcostal incision and exposed a gall-bladder without any obvious pathological appearances. He had reflected the peritoneum from the duodenum to about half-way up the gall-bladder and freed it from the gall-bladder. The common duct and cystic ducts were thickened, and he had felt a stone at or near the insertion of the cystic duct, which he had removed after opening the duct. The stone was of the mulberry type; it was not faceted and was probably a solitary stone. The bile was almost white in colour. A flexible probe had appeared to pass into the duodenum; but later attempts to pass a probe, a catheter or Hegar sounds had failed. He had removed the gall-bladder. The liver was dark and congested. He had debated whether he should open the duodenum and explore the ampulla or anastomose the common duct to the duodenum. The pancreas felt slightly thickened, but no further stones could be palpated. He had stitched a rubber tube to the opening in the duct enclosing a catheter passed along the duct; the catheter had been removed three days later.

After several anxious days the patient had collapsed suddenly on March 9. The amount of bile that had been draining away had usually been about 628 cubic centimetres (22 ounces) daily, but had been decreasing, probably on account of partial slipping of the tube. The patient had had pain in the back and epigastrium, and a hæmatoma had formed in the wound. On the twenty-third

day after operation the patient had vomited 508 cubic centimetres (18 ounces) of fluid containing blood, and had had melena on the following day, though there was free drainage of bile. For nine days "Desicol" capsules (inspissated bile) had been given and the patient's general condition had improved; the jaundice disappeared and the amount of bile drained amounted to twenty ounces a day. On April 5 the pathologist had reported the absence of bile from a specimen of fæces. Though the patient had vomited occasionally she was able to sit out of bed and her general condition had improved steadily. On April 11 Dr. Holmes had decided to operate, with the object of anastomosing the duct to the duodenum after further exploration of the duct. While the patient was being given a general anæsthetic after preliminary narcosis she had vomited yellow fluid proved to contain bile, and the operation was postponed. No evidence of bile had been found in the vomitus two days earlier. The stools rapidly became normal in colour and the patient was discharged from hospital ten days later with the wound closed and no drainage.

Dr. Holmes directed attention to certain points of interest. There had been no evidence of cholelithiasis in the gall-bladder; the common and cystic ducts were thickened; he had removed a solitary stone from the common duct; he had been unable to pass a tube or sounds into the duodenum; the hæmorrhages were unusual features; and there had been sudden and complete passage of bile into the duodenum.

Head Injuries.

DR. EDWARD BANNON showed a boy, aged fifteen years, who had sustained a compound depressed fracture of the right parietal bone, with left hemiplegia. He had been struck by a dislodged stone while at the foot of a cliff, and had been rescued while unconscious by a fireman, who ascended fifty feet of ladders with the boy's inert body strapped across his back.

The boy had been admitted to hospital on June 12, 1938, in a state of unconsciousness; brain tissue was protruding from the wound, and he was completely paralysed on the left side of the body. His eyes deviated to the left. Craniotomy was performed; depressed fragmented bone was removed, pulped brain tissue was swabbed away and the wound was irrigated with acriflavine. A small drain was inserted. The boy was unconscious for a week after the operation. He was given sedatives and magnesium sulphate solution *per rectum* and nutrient enemata. Dr. Bannon said that the boy's eye movement had recovered completely, and he had partly recovered from the hemiplegia.

Dr. Bannon's second patient was a man, aged twenty-five years, who had first been admitted to hospital on January 30, 1938, suffering from a lacerated wound of the face and a fracture of the orbital margin of the right maxilla, with some downward displacement. There was also a fracture of the right nasal bone. He was discharged on February 14, 1938.

On February 22 he had been readmitted to hospital, suffering from a compound fracture-dislocation of the left elbow joint. He was treated by means of Kirchner wire extension through the olecranon, and was discharged on April 21, 1938.

He had been admitted to hospital again on April 30, 1938, with a compound depressed fracture of the left frontal bone. On admission he was deeply unconscious; his temperature was 36·7° C. (98° F.), his pulse rate was 80 per minute, and his systolic blood pressure was 150 millimetres of mercury. Under light chloroform anæsthesia the wound was extended and a semicircular depressed fracture was revealed. Sound bone was trephined and depressed bone was elevated. Severe hæmorrhage occurred. The wound was loosely closed and drainage was provided. The patient remained unconscious for eight days and then gradually recovered. He was discharged, apparently normal, eight weeks later; no sign of brain injury was apparent.

On April 25, 1939, he was readmitted to hospital, complaining of severe frontal headache and some occipital headache. Clinical examination revealed no abnormality. The systolic blood pressure was 120 millimetres of mercury. On May 5, 1939, pronounced neck stiffness was present and Kernig's sign was elicited. There were no other neurological findings. Lumbar puncture was performed and turbid cerebro-spinal fluid was withdrawn under slight pressure. The fluid reacted to the Pandy and the Nonne-Apelt tests. It contained 430 cells per cubic millimetre; 44% were lymphocytes, 40% were polymorphonuclear cells and 16% were monocytes. No tubercle bacilli were present.

Dr. Bannon's next patient was a boy, aged twelve years, who on January 18, 1938, had sustained a depressed compound fracture of the frontal bone. The accident had occurred while the boy was fishing; he had fallen and struck his head on a rock. He had walked into the surgery "to have his head stitched". The frontal bone was trephined and the depressed bone elevated. Recovery was uneventful.

Dr. Bannon's fourth patient was a boy, aged four years, who had been kicked by a horse while playing and had been admitted to hospital on March 24, 1937, quite unconscious. There was a semicircular laceration of the scalp, and brain matter was on the hair.

The patient was lightly anæsthetized with chloroform; the scalp was shaved and cleansed, the wound was cleaned and the edges were trimmed. Extruding brain matter was removed and a depressed fracture was revealed. The depressed portion was elevated; no trephining was necessary. There was a small amount of hæmorrhage. The wound was irrigated with acriflavine, then closed; drainage was provided. The patient recovered from the anæsthetic in the usual way and remained conscious. He had been discharged on April 21, 1937, and had appeared normal ever since.

DR. A. E. COATES said that satisfactory healing had occurred in the two cases of compound fracture of the skull; the patients were not likely to have further trouble. He observed that the skull was recognized to have very good powers of healing after having been battered about, though the surgeons deserved his congratulations. The steps taken to prevent sepsis were complete *débridement* of the skin, removal of severely damaged brain tissue and loose suturing to provide efficient drainage. The second patient had had recurrent symptoms after multiple injuries and the depressed bone had been raised satisfactorily; but the brain had been infected and the frontal sinus involved. It had to be recognized that a fracture of the skull *per se* was of no consequence, but that it was the injury to the contained structures that was all important. From the medico-legal aspect, for example in insurance assessments, if such a patient had evidences of infection a year or more after the injury the infection could be related to the injury. Reconstructing the sequence of events in the case under discussion, Dr. Coates thought that following the injury there had been an involvement of the frontal sinus with some disintegration of the frontal lobe, and probably a quiet abscess had developed; and then, at a late stage, the abscess syndrome had become manifest. That syndrome was characterized by meningismus, by the turbid condition of the cerebro-spinal fluid, which contained many cells, although no organisms were necessarily recovered from it, and by papilloedema and headache. There were no gross signs of frontal lobe involvement; nevertheless cerebral abscess could not be excluded.

It might be thought that the condition was an intercurrent infection; but in Dr. Coates's opinion it was related to the old injury. The preparation of ventriculograms might be of use to confirm the presence of or locate an abscess. Dr. Coates described the procedure from the practical point of view; he said that needles could be introduced on two sides from the occipital area, by means of which the ventricles on both sides could be emptied of fluid and filled with air in order to avoid rupture of the abscess. He added that most abscesses were of the

metastatic variety, and some followed otitic disease. In his opinion the abscess in the present case did not require urgent treatment, but rising intracerebral pressure causing papilloedema did need prompt attention. A bone flap could be cut, allowing the *dura mater* to rise, though it need not be opened; it would stretch, and if it bulged the presence of an abscess was indicated. In that case a patch of the dura should be sealed onto the brain, and then a needle could be inserted to find the abscess. After the passage of a certain time the abscess could be enucleated when the wall had thickened and it could be treated as a brain tumour. Dr. Coates considered that the sulphanilamide treatment should be continued. He then proceeded to distinguish between the advisability of a ventriculogram and the inadvisability of an encephalogram; the latter was ruled out of court by the presence of papilloedema; in such a case air should not be introduced into the theca because of the danger of the production of a medullary cone of pressure when the fluid was withdrawn.

Dr. Coates went on to say that he did not think that there was anything new to which he need refer concerning the manner in which compound fractures of the skull were treated at the Royal Melbourne Hospital; but in the matter of simple fractures it might not be generally known that patients who were semi-comatose, with lacerated brain tissue and irritability, were no longer merely given Epsom salt *per rectum* and dehydrating intravenous medication. Lumbar puncture was practised frequently but carefully, small quantities only being withdrawn. That technique combined with the intravenous administration of glucose and magnesium sulphate served to remove blood from the subarachnoid spaces and hasten absorption by unclogging the arachnoid villi. The frequent withdrawal of a few cubic centimetres of cerebro-spinal fluid caused a slight disturbance and allowed the cerebro-spinal fluid to wash away blood from the villi. The frequent performance of lumbar puncture for the first day or two and the daily withdrawal of small quantities of fluid had been found to be a real advance in treatment.

Dr. Coates referred to the bad prognosis when cerebro-spinal rhinorrhœa occurred; such patients usually died. In contrast, when cerebro-spinal fluid escaped from a fistula through the ear the patient usually did not die. The treatment of a fracture of the base of the skull was conservative; the ear should merely be swabbed out and natural drainage should be allowed to continue. The track of the fistula became lined with endothelial tissue, which in its own good time would seal it off; it was a cause for alarm when the fluid suddenly ceased to run. Dr. Coates drew attention to the exceptional cases in which fluid escaped through the ethmoids and nasal fossæ. He said that the brain should be lifted up through a frontal flap and the orifice blocked by coagulation. If that were not done the patient was sure to die.

DR. S. V. SEWELL supported Dr. Coates's remarks by recounting the history of a patient whom he had seen recently, two years after a frontal fracture had been sustained. The pressure of the cerebro-spinal fluid was in the vicinity of 200 millimetres of water; three days after his admission to hospital the patient became deeply unconscious, developed decerebrate rigidity and died. At autopsy an abscess the size of a hen's egg was found in the frontal lobe, which had been well shut off until it had ruptured into the anterior pole of the ventricle; the pus had spread along the ventricular tree. The patient had been free from all symptoms for eighteen months before the "flare" which had caused his return to hospital.

Observing that he had known infective meningitis to follow ventriculography, Dr. Sewell said that in the case under discussion at the meeting he would advocate the immediate turning down of a bone flap to relieve the pressure; it would then be possible to wait, in the hope that the abscess would point. Speaking of the value of sulphanilamide, Dr. Sewell referred to the successful treatment of a patient suffering from hæmolytic streptococcal meningitis, whose intracranial pressure was greatly increased. An initial dose of six tablets was given, followed by three tablets three times a day; the total dosage was later reduced to six tablets a day. Dr. Sewell supported Dr. Coates's advocacy of repeated small withdrawals of cerebro-spinal fluid by lumbar puncture in the case of simple fractures with contusion and laceration of brain tissue. He observed that the procedure should be carried out two or three times a day if necessary; the phagocytic effect of the cells lining the subarachnoid spaces was very effective in destroying red cells and removing débris. He added that the patients had to be tided by repeated lumbar puncture over the time during which the œdema and oozing were present, and the phagocytic power of the cells would deal with the blood with extraordinary rapidity.

DR. C. H. OSBORN emphasized the importance of avoiding sepsis and minimizing scarring of the brain in the treatment of depressed fractures of the skull. He distinguished between cases in which the depressed fracture penetrated the dura and those in which the dura was not penetrated. He said that in non-penetrating fractures the cerebral signs were due to the initial force rather than to the bone fragment; if scarring followed it would be attributable to the force of the injury, and elevation of the bone was not likely to relieve it. Consequently, if there were no signs of increasing depression, there was no grave urgency to operate; the state of shock should be treated without delay and the fragment could be elevated at some more suitable time. Dr. Osborn showed from skiagrams that it was possible to tell by radiology whether the dura was penetrated. The technique was known as "tangential" radiography; the tube was placed at right angles to the line of depressing force.

In cases in which penetration of the dura had occurred, Dr. Osborn pointed out that early operation was indicated. After *débridement* a careful toilet of the underlying brain should be undertaken, and "mushed" brain should be removed by means of a gentle water suction pump. Hæmostasis should be carefully brought about, such suitable aids as Cushing's silver clips being used. After an efficient toilet the *dura mater* should be sutured if possible.

Dr. Osborn observed that chronic subdural hæmatomata were not uncommon in infancy, that some examples of hydrocephalus were due to the condition, and that a cure could be obtained in some cases. He added that the infants presented a progressive increase in the size of the skull; they might have convulsions or localizing signs might be present. To make the diagnosis clear, a long hypodermic needle could be inserted attached to a syringe, the operator maintaining suction by means of the piston as the needle was introduced. Bright blood-stained fluid would be withdrawn if a subdural hæmatoma was entered; the manœuvre might have to be repeated frequently.

DR. KEITH HALLAM discussed the diagnosis of fractures of the skull by radiographic methods. He referred to the dictum he had heard at the London Hospital some eight years earlier, that only 25% of fractures of the skull were demonstrable radiographically, and pointed out that the proportion had probably increased since that time. He emphasized the necessity for diagnosis to be made on clinical observations rather than on the interpretation of skiagrams; the films were used on many occasions to confirm the clinical opinions, and might reveal linear fractures or depressions which were not causing symptoms. Dr. Hallam also illustrated from films the advantages of the tangential exposition of depression.

DR. H. C. MALING asked whether it was usual to carry out lumbar puncture when a natal fracture was suspected, and whether it was advisable to perform a diagnostic puncture with a specially fine needle.

DR. S. I. WEIR asked for more information about post-traumatic headaches.

DR. W. R. ANGUS asked for information as to the significance of the presence or absence of the superficial abdominal reflexes in relation to frontal tumours, the importance of which used to be stressed by the late Kinnear Wilson.

Dr. Coates, in reply, said that the subject of post-traumatic headache was interesting. The worrying type was the patient with subdural hæmatoma who had returned

to work and after an interval of perhaps seven or eight months was still claiming compensation for disablement on account of headache. The representatives of the insurance companies might suspect the patient of "swinging the lead", and there was a tendency to speak of the condition as neurosis or neurasthenia; but Dr. Coates wished to emphasize the fact that there was often an organic basis for the headache. He said that any patient with intractable post-traumatic headache should be subjected to encephalography or surgical investigation through four trephine holes; blood clot, if present, would be extensive and easily located, and if the *dura mater* was darkened in colour the clot could be aspirated through it or the trephine hole could be enlarged and the *dura mater* opened through it. Dr. Coates observed that a hæmatoma might be enlarged as time went on by a process of dialysis through the semi-permeable membrane formed by the epithelial wall. The process might be slow and not cause headache for months or even years after the original accident. A persistent cerebral contusion might undergo the process of gliosis, changing the shape of the convolutions, distorting the ventricular system and blocking the circulation; by that process also headache definitely referable to the injury might occur after considerable delay.

Dr. Sewell, in reply, said that the arc for maintenance of superficial reflexes was through the cerebral cortex. Epicritic impulses passed to the immediate post-central gyri and from there by association fibres to the intermediate frontal and true motor areas; lesions of any of those three areas would produce absence or reduction of the superficial reflexes; it was of no biological importance for epicritic stimuli to be registered in either the spinal or mid-brain arcs, whereas deep stimuli were all-important for spinal and mid-brain reflexes. Accordingly, in conditions of pyramidal tract interference, deep reflexes were exaggerated and the superficial reflexes disappeared. The absence of the superficial abdominal reflexes, with some spasticity, apraxia and often some verbal aphasia, were evidences of an intermediate frontal lesion.

Dr. Sewell also referred to some very troublesome cases of hydrocephalus associated with paroxysmal headache and a pressure of cerebro-spinal fluid perhaps exceeding 300 millimetres of water, due to interference with absorption of the fluid; two weeks later the pressure might be lowered to about 100 millimetres. He said that an operation had been designed in which the kidney was removed, the pelvis and ureter being left; the pelvis was inserted with a cuff into the lumbar spinal canal. By that means a patient of Dr. Sewell had passed as much as 250 ounces of urine in twenty-four hours, the paroxysmal headaches had ceased, and after seven years no further attacks of headache had occurred. In conclusion Dr. Sewell said that the operative results in subdural hæmatomata were exceptionally good.

Correspondence.

THE STERILIZATION OF DRESSINGS AND SYRINGES.

SIR: A leading article appeared in *The British Medical Journal* (April 8, 1939) under the above title. References are given to investigations on the results of sterilization of dressings, gowns *et cetera*, by heat. From the day von Bergmann and his assistant Schimmelbusch introduced the aseptic method and steam sterilizers doubts have been cast on the efficiency of even superheated steam as a means of destroying microorganisms in folded dressings. The more thoroughly the method was investigated, the more evident it became that absolute trust could not be placed on materials so treated. The article in the journal definitely infers this and, as far as the author of it is concerned, he lets the matter rest there, hoping no doubt that a more trustworthy apparatus will be designed. A subleader in the same journal (February 25, 1939) refers to "Antisepsis in the Operating Theatre" and speaks of the attempts to render the air in this situation free from harmful organisms, quoting a means of attaining this by bactericidal radiant energy. Other methods that have been suggested are by formaldehyde spraying and antiseptic fogs. Recently in an operating theatre a surgeon was seen using swabs moist with an antiseptic solution. His explanation was that he did not trust the germ-laden atmosphere of the locality. Apparently he accepted the swabs as pure from the sterilizer. A critic would ask: "Why use the sterilizer at all?" What a saving in time and money it would be to do without one! The skin and syringes are the next objects dealt with by the leader writer, and his final words are that "the doctor must 'think bacteriologically'". In the preceding he has been offered some of his own medicine; let us offer him some more.

The skin is naturally greasy and it is impossible to remove all of its oily content. Why not use it as a vehicle to carry as deeply as possible our bacteriostatic reagent. A watery solution of carbolic acid readily gives up the antiseptic in the presence of oily substances, and it was for this reason that Lister used a lotion of 1 in 20 or 1 in 40 for disinfection of the unwashed skin. Evidently he was thinking bacteriologically.

The stronger solution is very suitable for disinfection of all instruments, including the hypodermic, by immersion for fifteen or twenty minutes, rinsing syringes thoroughly with hot distilled water. If a charge of air is needed in the barrel of the syringe, it can be sucked through a filter of two pledgets of wool, the outer one being moistened with carbolic; then the needle is attached, wiped with the antiseptic swab, filled, the needle wiped again and the injection made through the prepared area of skin. Preference is given to drying out the needle by drawing air through by rapid to-and-fro movement of the piston; no alcohol is used. The drums of dressings and steam sterilizers have no place here, "the trappings of a gorgeous ritual as compared with the mere shining of the inward light", as Godlee puts it in his "Life" of him who did more than merely think bacteriologically.

Yours, etc.,

A. C. F. HALFORD.

Wickham House,
Wickham Terrace,
Brisbane.
June 6, 1939.

Post-Graduate Work.

WEEK-END COURSE AT LISMORE, NEW SOUTH WALES.

THE New South Wales Post-Graduate Committee in Medicine announces that, in conjunction with the North-Eastern Medical Association, it will hold a week-end course at Lismore on Saturday, August 5, and Sunday, August 6, 1939. The programme is as follows:

Saturday, August 5, 1939.

(At the Canberra Hotel, Lismore.)

2 p.m.—General meeting of the North-Eastern Medical Association.
3.30 p.m.—Afternoon tea and registration for course.
4 p.m.—"Some Points in Plastic Operations on the Vagina", Dr. R. I. Furber.
6.30 p.m.—Official dinner.
8 p.m.—"A Discussion on New Drugs", Dr. G. Willcocks.

Sunday, August 6, 1939.

(At the Lismore Base Hospital.)

9.30 a.m.—Demonstration of medical cases by Dr. George Willcocks.

11.15 a.m.—"Some Points in Hysterectomy and other Abdominal Operations", Dr. R. I. Furber.
2.30 p.m.—"Recent Views on Cardiac Disease", Dr. G. Willcocks.
4 p.m.—"Obstetrical Problems in General Practice, including a discussion on Trial Labour", Dr. R. I. Furber.

The fee for the course will be one guinea. Those intending to be present at the course are requested to notify Dr. J. B. Oakeshott, Honorary Secretary, the North-Eastern Medical Association, Lismore, as soon as possible, also to state whether it is their intention to be present at the dinner.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

Award of Science Research Scholarships.

THE Royal Commissioners for the Exhibition of 1851 have appointed two Sydney scholars to science research scholarships tenable overseas for a period of two years. The successful scholars are Rita H. Harradence, M.Sc., and John W. Cornforth, M.Sc. The scholarships are of the value of £275 per annum. They are post-graduate and are intended to enable selected students of overseas universities, who have already completed a full university course and given evidence of capacity for scientific investigation, to devote themselves for two years to research work under conditions most likely to equip them for practical service in the scientific life of the Empire.

Usually the Royal Commissioners offer annually two scholarships to Australia. Last year they awarded two scholarships to Sydney and one to Melbourne.

Miss Harradence graduated Bachelor of Science in 1936 with first class honours and the University Medal in Organic Chemistry and the John Coutts Scholarship. She has been carrying out research work under the Commonwealth Government Research Grant since graduation as bachelor. She qualified for the higher degree, Master of Science, in 1937. She has published a number of scientific papers and she proposes to work at the University of Oxford under the direction of Professor Sir Robert Robinson, who was the first occupant of the Chair of Organic Chemistry in the University of Sydney.

Mr. J. W. Cornforth entered the university in March, 1934, having gained first class honours in English and chemistry, and second class honours in physics at the Leaving Certificate Examination held in November, 1933. He has been a meritorious student in chemistry, gaining high distinction in each year. In his third year (1936) he gained high distinction in both chemistry III and organic chemistry III, having been placed first in the year by the two professors of chemistry. The Caird Scholarship was awarded to him for 1937. At the end of that year he gained first class honours, the University Medal, the John Coutts Scholarship and the Science Research Scholarship. In 1938 he continued his research work in organic chemistry, preparing himself for the master's degree in science. He was admitted to the M.Sc. degree in May last. He proposes also to study under the direction of Professor Sir Robert Robinson at the University of Oxford.

A BUREAU FOR THE TRANSLATION OF FOREIGN LITERATURE.

MEDICAL PRACTITIONERS will be glad to know that a bureau has recently been opened in Sydney for the translation into English of foreign scientific literature. The staff consists of five professional men from Vienna, where they were previously connected with such an enterprise. One member of the staff is a graduate in medicine, one is a chemist, one is an economist, one is an engineer and one is a graduate in science. The medical graduate has during the whole of his professional life been connected with libraries and with journalism. The work of this bureau, known as The Scientific Research Auxiliary Services, can be recommended with confidence. The charges are moderate and the offices are situated at 9, Bligh Street, Sydney.

Obituary.

FRANK HOEFFER McMECHAN.

WE regret to announce the death of Dr. Frank Hoeffer McMechan, which occurred recently at Lake Wood, Ohio, United States of America. This information was received by cable on July 1.

JOHN LAWRANCE McKELVEY.

WE regret to announce the death of Sir John Lawrance McKelvey, which occurred on July 7, 1939, at Sydney, New South Wales.

ARTHUR CHARLES CULEY.

WE regret to announce the death of Dr. Arthur Charles Culey, which took place on July 9, 1939, at Nyngan, New South Wales.

Books Received.

THE ROLLER BANDAGE, by W. E. Bradford; 1939. London: George Allen and Unwin Limited. Crown 8vo, pp. 90, with illustrations. Price: 1s. 6d. net.

DIET AND ILL-HEALTH IN THE FOREST COUNTRY OF THE GOLD COAST, by F. M. Purcell, M.D., M.R.C.P., D.T.M. and H.; 1939. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 86, with 61 illustrations. Price: 7s. 6d. net.

PSYCHOTHERAPY, SCIENTIFIC AND RELIGIOUS, by M. Gregory, B.Litt., D.Phil.; 1939. London: Macmillan and Company Limited. Medium 8vo, pp. 512. Price: 21s. net.

OUR SEX LIFE. A GUIDE AND COUNSELLOR FOR EVERYONE, by F. Kahn, M.D.; translated from the German by G. Rosen, M.D.; 1939. London: William Heinemann (Medical Books) Limited. Medium 8vo, pp. 494, with illustrations. Price: 30s. net.

A DICTIONARY OF SCIENTIFIC TERMS. PRONUNCIATION, DERIVATION, AND DEFINITION OF TERMS IN BIOLOGY, BOTANY, ZOOLOGY, ANATOMY, CYTOLOGY, EMBRYOLOGY, PHYSIOLOGY, by I. F. Henderson, M.A., and W. D. Henderson, M.A., B.Sc., Ph.D., F.R.S.E.; Third Edition, revised by J. H. Kenneth, M.A., Ph.D., F.R.S.E.; 1939. London and Edinburgh: Oliver and Boyd. Demy 8vo, pp. 395. Price: 16s. net.

THE VAGINAL DIAPHRAGM: ITS FITTING AND USE IN CONTRACEPTIVE TECHNIQUE, by Le Mon Clark, M.S., M.D.; 1939. St. Louis: The C. V. Mosby Company; Australia: W. Ramsay (Surgical) Proprietary Limited. Demy 8vo, pp. 106, with illustrations. Price: 10s. 6d. net.

RECENT ADVANCES IN OBSTETRICS AND GYNÆCOLOGY, by A. W. Bourne, M.A., M.B., B.Ch., F.R.C.S., F.R.C.O.G., and L. H. Williams, M.D., M.S., F.R.C.S., F.R.C.O.G.; Fourth Edition; 1939. London: J. and A. Churchill Limited. Large crown 8vo, pp. 376, with illustrations. Price: 15s. net.

THE RELIEF OF PAIN: A HANDBOOK OF MODERN ANALGESIA, by H. Balme, M.D., F.R.C.S., D.P.H., with an introduction by E. F. Buzzard, Bt., K.C.V.O., LL.D., M.D., F.R.C.P.; Second Edition; 1939. London: J. and A. Churchill Limited. Large crown 8vo, pp. 415. Price: 12s. 6d. net.

PRACTICAL CHILD PSYCHOTHERAPY, by C. Boenheim, with a foreword by H. Finkelstein; 1938. London: John Bale Medical Publications Limited. Demy 8vo, pp. 177. Price: 10s. 6d. net.

LEAGUE OF NATIONS PUBLICATIONS. TECHNICAL COMMISSION OF THE HEALTH ORGANISATION ON NUTRITION: GUIDING PRINCIPLES FOR STUDIES ON THE NUTRITION OF POPULATIONS, by E. J. Bigwood; 1939. Geneva: League of Nations Publications Department; Australia: H. A. Goddard. Royal 8vo, pp. 281. Price: 6s. net.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Eglitzky, Ben-Zion Charles, M.B., 1939 (Univ. Sydney), Balmain and District Hospital, Balmain.

Funder, Brian Patrick, M.B., B.S., 1933 (Univ. Adelaide), F.R.C.S. (Edinburgh), 1937, Box 49B, G.P.O., Broken Hill.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Kay, Henry Buckhurst, M.B., B.S., 1938 (Univ. Melbourne), Royal Melbourne Hospital, Melbourne.

Weyman, Irwin James, M.D., 1928 (Genoa), 186, Cotham Road, Kew.

Colin, Ernest, L.R.C.P. and S. (Edinburgh), M.D. (Germany), 1938, Eye and Ear Hospital, East Melbourne, C.2.

Tenny, Alan Percival, M.B., B.S., 1937 (Univ. Melbourne), Tongala Hospital, Tongala.

Diary for the Month.

JULY 27.—South Australian Branch, B.M.A.: Branch.
JUNE 28.—Victorian Branch, B.M.A.: Council.
JUNE 29.—New South Wales Branch, B.M.A.: Branch.
JULY 4.—New South Wales Branch, B.M.A.: Council (quarterly).
JULY 5.—Victorian Branch, B.M.A.: Branch.
JULY 5.—Western Australian Branch, B.M.A.: Council.
JULY 6.—South Australian Branch, B.M.A.: Council.
JULY 7.—Queensland Branch, B.M.A.: Branch.
JULY 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JULY 14.—Queensland Branch, B.M.A.: Council.
JULY 18.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 19.—Western Australian Branch, B.M.A.: Branch.
JULY 20.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 26.—Victorian Branch, B.M.A.: Council.
JULY 27.—New South Wales Branch, B.M.A.: Branch.
JULY 27.—South Australian Branch, B.M.A.: Branch.
JULY 28.—Queensland Branch, B.M.A.: Council.
AUG. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 2.—Victorian Branch, B.M.A.: Branch.
AUG. 2.—Western Australian Branch, B.M.A.: Council.
AUG. 3.—South Australian Branch, B.M.A.: Council.
AUG. 4.—Queensland Branch, B.M.A.: Branch.
AUG. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 11.—Queensland Branch, B.M.A.: Council.
AUG. 15.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 16.—Western Australian Branch, B.M.A.: Branch.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xviii-xx.

DEPARTMENT OF INSPECTOR-GENERAL OF HOSPITALS, ADELAIDE, SOUTH AUSTRALIA: Resident Medical Officer.

KING GEORGE V AND QUEEN MARY MATERNAL AND INFANT WELFARE FOUNDATION: Investigation and Research Grants.

THE HORNSBY AND DISTRICT HOSPITAL, HORNSBY, NEW SOUTH WALES: Honorary Officers.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.

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